PRICE ONE SHILLING.

How To Be A Successful Amateur Photographer







By W. J. Lancaster, F.C.S.

J. Lancaster & Son, Opticians, Birmingham.

HOW TO BE

A

SUCCESSFUL AMATEUR PHOTOGRAPHER.



BY

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BIRMINGHAM.


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BIRMINGHAM



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HOW TO BE A SUCCESSFUL AMATEUR PHOTOGRAPHER,

BY

W. J. LANCASTER, F.C.S., ETC.

IN presenting the 60th thousand issue of this small work to the ever growing army of enthusiastic Amateurs, who have just stepped on the lowest rung of the ladder of success, I acknowledge with pleasure the many expressions of thanks for the simplicity of the language used, and for the directness and completeness of the information contained in its pages.

The present issue is more complete and extensive than the former editions, and I trust will be as useful, profitable, and helpful to the reader as the former issues have been. My desire has been, and is now, to initiate the reader into the study of that Art (than which there is none more fascinating) which stores images of faces and places, and leaves nothing but pleasant memories of delightful excursions or happy picnics. The Amateur Photographer is now met with in every part

of the world. The Norwegian, revelling among the grandeur of fjord and mountain scenery; the Muscovite, in the wilds of Siberia ; the Swiss, in his mountain, lake, and glacial surroundings ; the Dutch, among his dykes and windmills ; the stolid German, in his Fatherland ; the Italian, with his fairy lakes and gorgeous sky ; all vie with each other in the production of amateur work of the highest attainable quality. The never-beaten Englishman, the humorous Irishman, and the keen Scotchman all delight in unravelling the secrets of Amateur Photography, and one might recount the names of almost every nationality in the world, and say that here and there are bands—countless bands—of Amateur Photographers.

In the following pages will be found all the information that is necessary to enable anyone, without any previous knowledge, to take a negative and print a picture in the shortest possible space of time, and all I ask is that I may act in the *rôle* of Conductor, and that my instructions shall be carried out to the letter. We will go together hand in hand, and when our earliest successes are chronicled, then we will aim at something higher—it may be Colour Photography, Radiography, Solar or Stellar Photography, or some other development that the immediate future will reveal.

CHAPTER I.

APPARATUS AND HOW TO SELECT IT.

IN the selection of a Photographic Apparatus, two things have to be considered; first and most important how much we intend to spend, and, secondly, the size of Camera we desire to obtain. Taking them in order, we find the smaller sizes are naturally the lowest priced ones, but it is well to remember that a low-priced apparatus is not always the cheapest; but, if our means are limited, we shall have to select among a few only; but where a pound or so makes no material difference to us, the better way is to spend it, not on a lot of accessories, but on a superior apparatus, with which we shall be able to do work of a higher class than with the low priced sets.

Secondly, as to sizes, the following are the popular sizes:—

$3\frac{1}{4} \times 3\frac{1}{4}$... For Lantern Transparencies.

$4\frac{1}{4} \times 3\frac{1}{4}$... Quarter-Plate for Cartes.

$6\frac{1}{2} \times 4\frac{3}{4}$... Half-Size for Cabinets.

$8\frac{1}{2} \times 6\frac{1}{2}$ Full-Plate for large views, groups, etc.

Other sizes are 5×4, 10×8, 12×10, 15×12, etc.

Having carefully gone through this list, and remembering that with each of the larger sizes we can use *Carriers for any of the smaller sizes*, we will examine each of the different kinds of apparatus presented to us before making a final decision.

In making this final decision it will be well to remember that the larger sizes are so much heavier to carry, although on the other hand the results obtained may be more pleasing and possess greater detail; generally speaking we shall find that

The ¼-Plate is very handy to carry, most compact, and with a good Lens will do charming Photographs.

The ½-Plate or Cabinet is a very nice size, and pictures produced with this size apparatus contain a lot more appreciable detail than ¼-Plate.

The ¼-Plate is an excellent size for Landscape, Groups, Architectural Subjects, etc., etc.

Now as to cost. If we can only spend

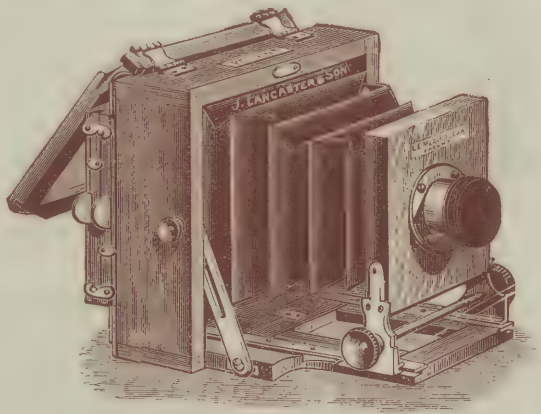
£1 1 0	**We have ¼ Merveilleux, Boy's Own Set, and "Omnigraph" Detective Camera.**
£2 2 0	**½ Merveilleux, ¼ Instantograph, Snap-Shot Camera, ¼ Ladies' Camera, Lantern Slide Camera, and Stereo-Merveilleux.**
£3 3 0	**½ Merveilleux, ½ Meritoire, ½ Ladies' Stereo-Meritoire, and ¼ "Rover" Detective Camera.**
£3 3 0	**Aluminium Instantograph ¼ Plate.**
£4 4 0	**½ Instantograph, ½ Complete Instantograph Outfit, Stereo-Instantograph, and 5 × 4 "Rover" Detective Camera.**
£5 0 0	**½ Brass-Bound Instantograph, ½ International, ½ Special or Extra-Special with Rectigraph Lens, ¼ Ladies' Complete Set.**
£5 5 0	**½ "Rover" Detective Camera.**
£6 6 0	**½ Meritoire and Set, ½ Instantograph, ½ Amateur's Complete Outfit.**
Up to **£10 10 0**	**½ Instantograph Complete Outfit, ½ Special or Extra-Special, with Rectigraph Lens, &c.**
Up to **£20 0 0**	**12×10 Instantograph Complete Set, 12×10 Extra-Special Sets, etc.**

To obtain results of the highest order, we ought to have a best Lens, and the extra cost of the Rectigraph Lens will be money well and wisely spent, and it may be to our advantage at this point to learn something about Lenses.

CHAPTER II.

THE CAMERA.

THE Camera off to-day is far different to the Camera of ten years ago; the special features we must look for are lightness, portability, and riggidity: we shall be able to select a Camera to suit any possible requirement, and in our selection we can have either the modern form with Kinnear bellows, or the older form with



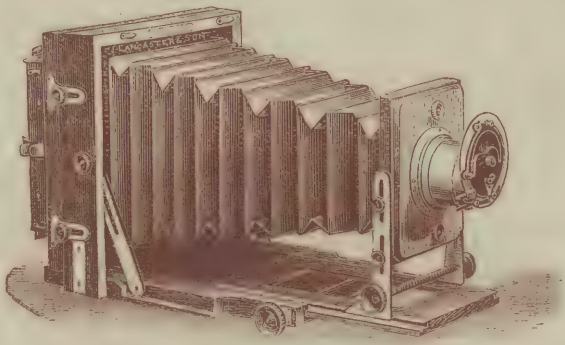
"LE MERVEILLEUX"
(PATENT).

square bellows. The Camera in woodcut "Le Merveilleux" is a type of Camera esspecially popular, it is made of mahogany, well framed together, the front part being joined to back by a bellows body, which makes the Camera very portable. The Focussing Slide is hinged and folds over on to the top of Camera when dark slide is in the Camera. The Slide reverses in an instant, so that a vertical or horizontal photo. can be taken without moving any part of the Camera. This camera we shall find to be very strong, yet light and portable, and although it is of simple construction it is capable of really excellent work.

Prices of Camera, Slide, Lens, and Stand.

¼-plate, **21**/-; ½, **42**/-; 1, **63**/-; 10×8, **84**/-; 12×10, **105**/-

FOR high-class work, a Camera should have a Swing Back, or preferably, a Double Swing Back and Rising Front. Very often we shall have to slant the Camera to get in the whole of the subject, and then it is absolutely necessary to keep the back of Camera quite parallel with building, so that the picture we obtain



THE "INSTANTOGRAPH"
(PATENTED).

shall have straight lines. The "Instantograph" is a form of Camera having Double Swing Back and Rising Front, and it is an easy matter for us to so adjust the back of Camera, that our picture may be architecturally true. This form of Camera is exceedingly useful, and very popular. The Reversing Back is simple, and can be altered in an instant, so that a vertical or horizontal photo. can be taken. The Camera is beautifully made, and folds up into the smallest compass possible. The Tail Board opens out of Camera, and the Lens Front slides out and clamps. Fine Adjustment is obtained by Rackwork. The bellows in the "Instantograph" are made of leather, and the whole apparatus, of which over 70,000 have been sold, is pronounced the *sine quâ non* of the Amateur Photographer.

EACH SET CONSISTS OF CAMERA, SLIDE, LENS, AND STAND.

¼, **42/-**; ½, **84/-**; ¾, **126/-**; 10 × 8, **168/-**; 12 × 10, **210/-**

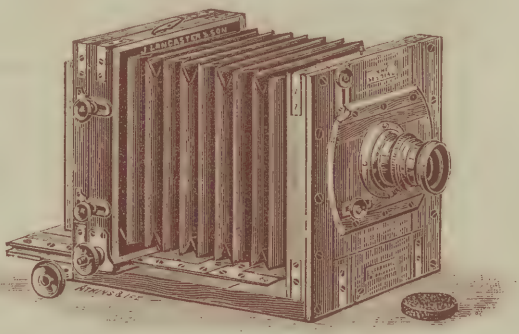
Ditto, ditto, with Patent Rectigraph Lens and See-Saw Shutter in place of Instantaneous Lens,

¼, **£3 4 6**; ½, **£6 1 6**; ¾, **£8 13 6**; 10 × 8, **£11 5 6**; 12 × 10, **£14 5 0**



MADRID
TAKEN WITH INSTANTOGRAPH.

SOME Amateurs have still a fond recollection and love for the older form of Camera with square bellows. It is true we may build such a Camera stronger, and with greater rigidity than the tapper bellows form, but we shall find this form of Camera heavier than those we already know. The square bellows Camera possesses great rigidity, and has a rack adjustment for focussing, also double swing back and rising and cross fronts. We should find such a Camera well fitted for a long journey over a rough country, its peculiar form and brass binding give it a solidity that quite compensattes for its greater weight.



"IMPROVED SPECIAL" CAMERA.
(PATENT).

We shall find that the variety of build in square bellows Cameras is very great, so many forms in fact that it becomes difficult to choose, but a Camera on the lines of "Improved Special" really supplies all our wants, folding up into a compact apparatus, capable of very long service.

Lancaster's "Improved *Special*" Camera
(PATENT).

Consisting of Camera, Double Dry Slide, Rectigraph Lens, Shutter and Stand.

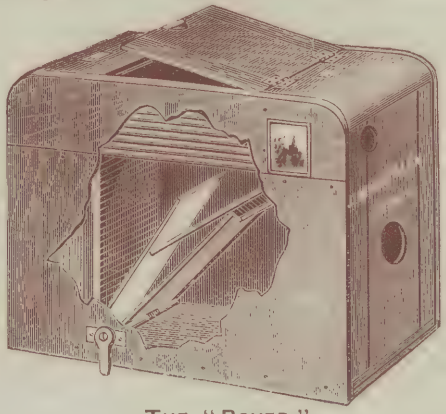
¼-plate, **100/-**; ½-plate, **150/-**; ¾-plate, **200/-**

WE have now only one kind of Camera to examine, and this is perhaps the most extensively used of any of them. The Hand Camera, Detective or Magazine Camera is made in every conceivable form. One of the simplest in construction and easiest to manipulate is the one in wood-cut, "Stopit." This Hand Camera consists essentially of a Camera whose length equals focus of Lens, so that we may pick it up, take a photo., and put it down again in less time than it takes one to read these words. The Plates are carried in a metal dark slide and all that has to be done is to pull out shutter of slide, expose, and close shutter all done in a few seconds.



"STOPIT."

The Magazine Camera carries a number of plates ready for exposure, and a mechanical arrangement brings the plates into position as fast as they may be required. The woodcut below will sufficiently explain itself, it consists of practically three chambers,



THE "ROVER."

(1) a space at top holding twelve plates or films, in carriers; (2) the Camera proper; and (3) a space at back to hold twelve plates after exposure. Each chamber is light-proof.

"STOPIT,"	"ROVER,"			
	$3\frac{1}{4} \times 3\frac{1}{4}$	$4\frac{1}{4} \times 3\frac{1}{4}$	5×4	$6\frac{1}{2} \times 4\frac{3}{4}$
10/6	£2 12 6	£3 3 0	£4 4 0	£5 5 0

CHAPTER III.

LENSES.

THERE is no part of the outfit so important to the Amateur as the lens; and certainly there is more room for deception in the lens than in any other part of the apparatus. The amateur, as a rule, knows comparatively nothing as to the quality of a lens he may be about purchasing, and it is difficult to convey to him in a few words what to avoid; we will examine a lens together, and will lay down the following conditions:—

1st.—The lens must be of absolutely clear glass.

2nd.—It must not contain any fine wavy lines.

3rd.—As a single lens its inner surface should be concave or meniscus form.

4th.—It should be mounted optically true.

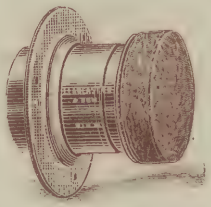
For our first we shall be able to satisfy ourselves in a moment by laying the lens down on a piece of white note paper; if the lens but slightly colours the paper, it will do, but if it should have a yellow tinge, or a pronounced green tinge, we will discard it.

The second point we can determine by holding the lens about ten inches from our eye, and looking into its structure for fine wavy lines; if present, the lens is bad.

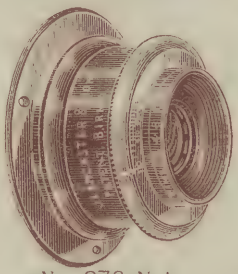
Thirdly, we can at once tell by its shape whether the lens is concave.

Fourthly, we must, by turning the lens and cell round, by gently unscrewing out of mount and watching an object reflected by its posterior surface, ascertain whether the image moves; if it moves in a curved direction, the lens is not true in its cell; if the image is stationary, the lens is right.

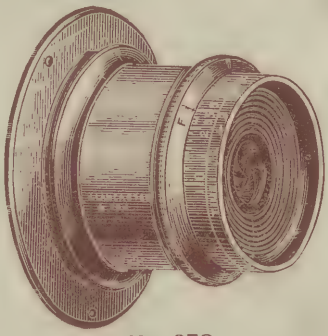
LENSES may be obtained to do fairly good work at most moderate prices, but for better class work it is essential that we should have a higher quality lens.



No. 374

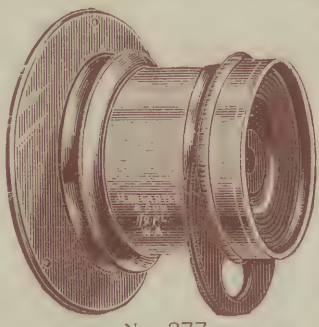


No. 376 N. A.



No. 378

We may divide lenses in two classes. Single and double Combination Lenses, of the former; Nos. **374**, **376**, **377** and **378** are examples; we shall find each one of them to be composed of two or three lenses, cemented together, to form apparently one lens only. No. **374** being the simplest form, suitable for Landscape work, while No. **378** is a much superior lens and is suitable for any kind of work, Portraits, Groups, Instantaneous Photographs. It has an Iris Diaphragm, with divided scale. No. **376** N.A. is a Narrow Angle Lens; No. **377** a Wide Angle Lens, both of which we will discuss later on. No. **378** has an Instantaneous Shutter for very rapid work.



No. 377

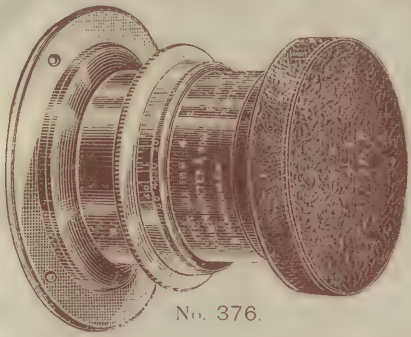
LANCASTER'S NEW WIDE ANGLE LENS.

	¼	½	¾	10 × 8	12 × 10
No. 374	5/-	10/-	15/-	20/-	25/-
" 376 N.A.	12 6	21/-	30/-	42/-	50/-
" 377	10 6	15/-	21/-	25/-	30/-
" 378	21/-	30/-	42/-	52/6	63/-



TAKEN WITH RECTIGRAPH LENS,
BY J. W. BEAUFORT, PHOTO., BIRM.

FOR best quality work, we must have one of the Double Combination Lenses, these are known as Rectigraph, Rectilinear, or Symmetrical Lenses. They are composed of two sets of Lenses, mounted equi-distant from the Diaphragm, which of course we shall find between them, and with these Lenses we shall be able to obtain the finest possible results, and, although their cost is higher than Single Combinations, yet the brilliancy and accuracy of the picture obtained well repays our extra outlay.



No. 376.

No. **376** W.A. is a Wide Angle Rectigraph, and No. **376** Combination is a very useful Lens, giving three different sizes at same distance, that is, we are able to use it as a Narrow, Ordinary, and Wide



No. 376 W.A.

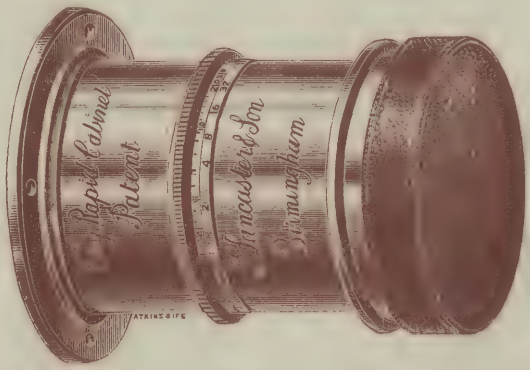


No. 376 Combination.

Angle Lens, as we may require it. All the Rectigraph Lenses have Patent Iris Diaphragms with divided scale, showing aperture of diaphragm and comparative speed of each size.

	¼	½	1	10 · 8	12 · 10
No. 376 ...	**40/-**	**60/-**	**80**	**100/**	**120/-**
" 376 W.A.	**30/-**	**42/**	**50/-**	**63/**	**70/**
" 376 Com'n	**30/**	**42/**	**50**	**70/-**	**90/-**

FOR Portraiture alone, it is sometimes advisable to have a Lens specially made for such work, and although this is a luxury we can do without, especially if we are the happy possessors of a Rectigraph Lens, still, if we are desirous of turning out really brilliant portraits, then a Lens of the construction of No. 382 B is necessary.



No. 382 B.

SERIES B.—Giving Superb Definition, with great Rapidity of Action.

Such a Lens works at a very much larger aperture than either of the others we have been discussing, so that while the exposure is much shorter, there will be less liability of motion in the sitter. We can use a rapid shutter with this kind of Lens, and the picture will be one of those so-called speaking likenesses, in which one gets so much depth and roundness of figure.

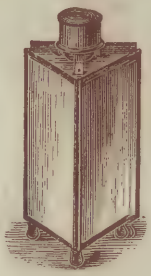
No. 381 B.—¼, **75**/- No. 382 B.—½, **110**/-

Simpler Form, No. 376 P.—¼, **21**/- ; ½, **42**/-

CHAPTER IV.

ACCESSORIES.

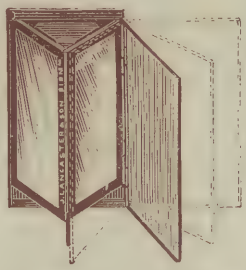
IN addition to the Camera and Lens, there are other things which we must have before we can commence work, and it will be necessary for us to go carefully through our wants, and then get what we are compelled to have. First we must have a Ruby Lamp; of these we may have a choice of several kinds—oil, candle, gas or petroleum.



OIL LAMP.



CANDLE LAMP.

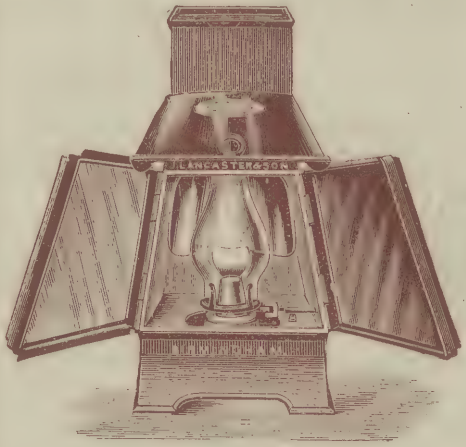


LANCASTER'S PATENT FOLDING LAMP.

The Oill Lamp contains an oil burner with cap. The Candle Lamp has a candle holder with spring chamber. **Lancaster's Patent Folding Lamp** closes into ¾-inch, and opens out in an instant. It has a self-feeding candle chamber, and when opened as in woodcut, may have the door closed on one half, giving only darkest ruby light, and may, as developing proceeds, be gradually opened, thuss regulating amount of light to the greatest possible nicety.

Oil Lamp, 2/- Candle Lamp, 3/- Ditto Folding, 5/-

FOR use in large dark room we want a lamp giving lights of varying intensity; for instance, while we are developing our plates, it is absolutely necessary to screen the plates as much as possible from the direct ruby light, and such a lamp as the one in woodcut

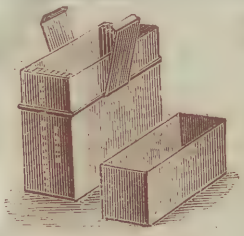


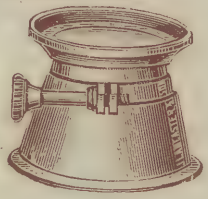
LANCASTER'S NEW "RUBRALUX" LAMP.
(PATENT).

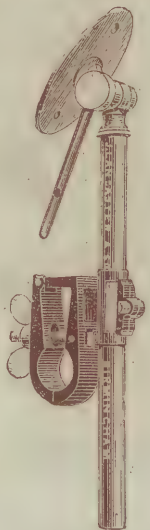
Can be used as a White, Yellow, Ruby, or Deep Ruby Light.
Double Reflectors. Perfect Illumination.

gives every facility we require. It has two folding doors each glazed with a different coloured glass, so that when both doors are open we shall have white light, when one door is closed yellow, and when the other door alone is closed ruby; such a lamp can be had to burn either petroleum, or ordinary gas, if we have it laid on in our dark room.

Ordinary "Rubralux," 7/6 Large Size, 10/6
Ditto Gas, 12/6







AMONG other very useful accessories, we ought really to have a Plate Box, and it should be made of metal perfectly light-proof. When we unwrap a dozen of Plates, it will be well to at once transfer them to the Plate Box, and use them from it as we require them.

Another very useful article is a Compound Focusser. This we shall find exceedingly handy as it dispenses altogether with a focussing cloth; and if we are cyclists then a small handy clip, which will enable us to dispense with stand, is useful; such a clip can be attached to almost anything from a five-barred gate to the handle of an umbrella.

Plate Boxes.

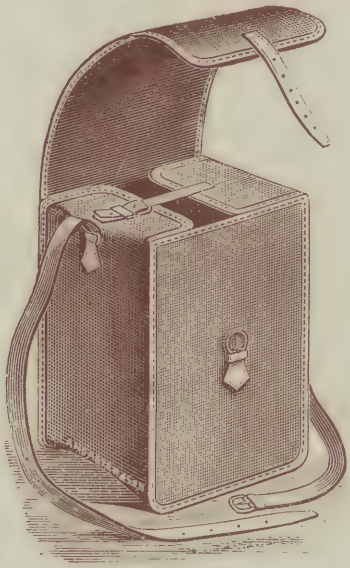
¼, **1/6** ½, **3/-** ¾, **4/6**

Focusser, 2/-

Cycle Clips.

¼, **7/6** ½, **10/6**

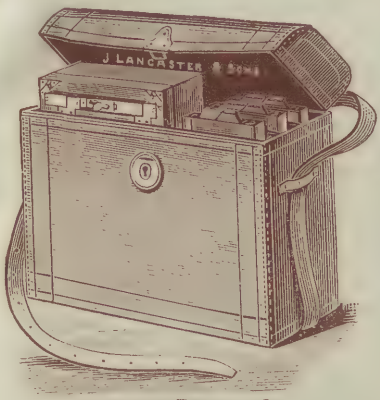
WE shall find a Knapsack to sling over our shoulders a wonderful help in a day's work in the country, assuming that our kit consists of Camera, Lens, 3 double dark Slides, and case to contain the whole, we shall have quite sufficient for a day's work.



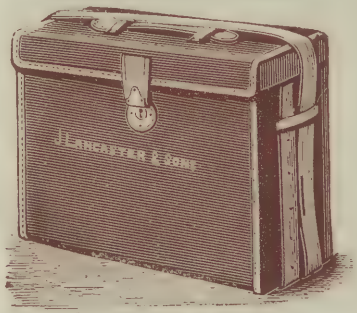
WATERPROOF CASE.

We shall not be in a hurry to expose our plates on the first thing we see, it is better to look well at the subject before we unpack our Camera, &c., and, having made up our mind, then in a few seconds our Camera is ready, plate is exposed, and before packing up again we will take out our note book, and put down subject, size of stop, exposure, approximate amount of light. We can make a table of our own, say 1 to 10, the latter being brilliant sunshine, and the former a dull afternoon; with a very little experience we shall be able to determine the necessary exposure to a nicety on any future occasion. This little note book we will keep in our case so that we shall never be without it.

		$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$
Waterproof Case	...	**5/-**	**7/6**	**10/-**



LEATHER BOUND CASE.



BEST LEATHER CASE.

THE knapsacks or cases are made in different materials, all of them are waterproof and nicely lined, so that our Camera Slides &c., need not get rubbed during the hardest day's work. There are three kinds of cases; the first is a waterproof one, made like bicycle knapsacks, strong and cheap. These are not so strong as the second class made of American leather, with real leather bindings, straps, &c. The third class are very beautifully made, and if we can afford the extra cost, we will have one, because the best case puts such a finish upon the apparatus that we are really obliged to take more care of our apparatus, by keeping it free from dust, &c., making it last much longer than we otherwise should do.



We can also have a case for our Camera Stand; these are very nice when travelling, the stand being put into the case in a few seconds, and, as their cost is very small, it is an indulgence worth having.

Leather Bound Case	...	¼,	**7/6**	½,	**10/6**	1,	**15/-**
Best Leather "	...	"	**17/6**	"	**25/-**	"	**35/-**
Stand "	...	"	**3/-**	"	**4/-**	"	**5/-**

A Camera Stand is a necessity in an ordinary set of apparatus, and our selection may be among a great variety of form and build, but the only essential points we will look for are lightness, rigidity, and convenience. We may have a stand with two, three, or four folds, the fewer the better. We may have fittings in brass, aluminium, or nickel, but if we get a fairly rigid stand, which brings centre of Camera on a level with our own vision, then we shall have all we require. A catalogue of such stands, with woodcuts, may be found following last chapter, to which we may refer for details.

Having now obtained our apparatus, and having carefully examined every bit of apparatus, and become quite satisfied as to the use of every screw and fitting, we will at once go to the Dark Room and start on the royal road to success.



Chapter V.

The Dark Room.

THANKS to dry plates, we are now in a position to do without a dark room of the old kind, and, as a consequence, we no longer smear our fingers and hands with silver stains; now we can develop our plates in the bedroom, the pantry, the bath room, or anywhere we may decide upon; still, it is better to use a small closet, pantry, or any other room we can lock up and keep the key. If we can find a room with a window facing the north or the east, then we may glaze one or two panes with deep ruby glass and paint all the others black, or make a wooden frame to cover the whole of the windows (light-tight) and put in it a pane of dark ruby glass (about 24-in. × 18-in.) If we can use up the whole of a small window frame, say up to 30-in. × 20-in., then our best plan is to glaze all but one pane near developing tray with dark ruby, the one pane, say 12 × 10, should be of canary yellow or pale orange; we will make a frame carrying a piece of ruby to cover this, and easily moved, so that when development is over, we may allow more light to enter dark room. If there is a water supply, so much the better, if not, a wooden tub with a pipe and pinch cock would be very useful; or in the absence of both, a bucket of water and a jug will answer every purpose. If we have a shelf above developing tray, we can then place a bucket or jug full of water upon it, and have an india-rubber

syphon hanging over dish, this will give a nice stream of water. If we decide to develop at night, then the ruby lamp will be all that we shall require in the form of light. The plates and chemicals may be carried to a washing stand or a sink, and when the developing is finished, the whole of the things may be stowed away tidily (do all things neatly) ready for the next occasion, without the delays due to carelessness. If, however, we can find or make an outdoor dark room, so much the better, but we must take care to close every chink and crack, and have the room free from the least particle of white light. The room should be of good dimensions, say 6-ft. or 7-ft. × 5-ft. with one or two panes of ruby glass, and a sliding pane of dark ruby; this may be removed after developing. The room should be ventilated by means of a **Z** formed tube, which will allow heated air to escape, and prevent the ingress of light. The greatest care as to light will be in the door; it is always worth while to put up an extra partition inside, so that the door is hidden, or to have a curtain to draw over the door inside when closed. A large number of plates are wasted through having a dark room that is not light-proof.

A cellar may be used as a dark room in the absence of any other convenient place. The cellar should be quite dark, and a good ruby lamp should be used. One of the best lamps we can use is the Rubralux; with this lamp we can have white light, or by closing one door, orange light; closing both, dark ruby; all this light can be reflected down on to the plate by the reflector in front.

On the supposition that we have formed or made a room to suit us, then we should provide ourselves with a lock-up cupboard, and use every effort to keep all our chemicals, &c., perfectly clean, and in so-called (whatever it may mean) apple-pie order.

All the bottles, etc., we use, should be loosely fitted into a tray which can be lifted in and out of our cupboard with ease. It is really a great treat to be able to find all our bottles, measures, etc., with our eyes shut. Method is the *open sesame* of the amateur photographer.

A great number of our troubles may, and often will, arise from the use of a dark room not light-proof, and if we find that our plates will fog, despite all our method, care and attention, let us make a simple experiment. We will now take a quarter plate (slow or quick) and place it, face upwards, in our dark room; we will then place a penny on the centre of plate, and leave it for five minutes this is about the longest time it will ever take us to develop a negative—then we will develop the plate, and if we can see the plate going dark around space covered by penny, then dark room is not light-proof, and we must search for the crack or hole through which it comes. To do this, we will close up window, put out light, and wait until we are accustomed to the darkness, then we shall soon be able to find the source of trouble and remove it.

Our dark room is useless unless we have the chemicals and plates requisite for commencing work. There are differences of opinion as to the quantities of chemicals necessary to form our stock, but we shall find it much better to get our chemicals as we require them, rather than obtain a heavy stock at commencement; or, in fact at the very commencement it is really better to have our chemicals mixed for us, then we can afterwards make up our own solutions, and to do this we shall need a box of scales and weights, a two ounce and one dram measures, and the following chemicals:—one ounce each of pyrogallic acid, ammonia, bromide of ammonium, bromide of potassium, and acetate of soda, two lbs. of hypo., and 15 grains of chloride of gold.

We are now ready to determine the particular plate or film we intend to use, dry plates are made under so many different names — Ordinary Rapid, Extra Rapid, Ischromatic, &c., &c. It will be far better to commence with a slow plate, and let us take up any plate to begin with, being satisfied that the reputation of the maker is good, and cannot be associated with a bad plate. Then we will work away with it, determined to produce a good negative, and if we begin with this spirit we cannot fail : we shall be met by amateurs who have never been really successful, because they have tried a host of different plates, and have never become thoroughly acquainted with any one of those tried ; we shall be told that a certain plate is useless by one amateur, and the very next in all probability will tell us the same plate is a magnificent one ; every plate maker will be blamed, aye, almost cursed by some, and by others will just as heartily be blessed. Well, let us go over the various lists of the hundred and one makers and make up our minds which we intend to use. We will get those we want and keep them in a dry place ; if we put them into a damp closet we shall soon find to our cost the whole of them will be spoiled. When opening a box of plates, it is better at once to store them away in a light tight plate box, then they will always be ready for us the moment we require them, and we will store them in the darkest and driest corner in our cupboard, as near the bottom as possible, so as to be away from any ammonia fumes, and now we are ready for our first negative.



TAKEN WITH RECTIGRAPH LENS.

Chapter VI.

The Subject.

NOW we come to one of the most important features in the whole process. We must have a Subject, and oh, we won't subject anyone we care a straw for to the trying ordeal of being converted from a christian into a murky brown savage; no, we don't intend asking Adelina, Augusta, Eleanor or Teresa to be our model, we will search for some statuette or bust that will not grumble at us if we do convert a blonde into a brunette; or, perhaps better, will try a landscape, and when fairly successful we will then make an attempt at a portrait; but even a landscape will teach us some lessons we ought never to forget. A landscape to make an impressive picture wants careful study, and when once we have hit upon the right spot we will put some form of life, boy, girl, cow, sheep or dog, into the centre or a little off the centre of the foreground, and take a picture worth giving away. It will well repay us to examine all the best pictures of the great masters, and to note how the least bit of life gives beauty to the picture. Cover over the small portion containing may be fisherman, sportsman, dog, or what not, and the picture becomes cold and dull; in our work we shall find some of the roughest nooks will give the most charming results, and a collection of such pretty little spots, with memories called back, will produce joy and pleasure on what otherwise might be dark days. A novel may charm one and lead one over lands whose dim memories take much refreshing to form shape, but the results of one's own fixed images upon paper, of lovely little bits, of the dashing wave, or the rushing train, charm, not for the moment, but to the end of one's life; the charm growing with age and infirmities.

PORTRAITS.

Assuming that we have earned our title as to Landscape Photography, now let us try to take a portrait; and first we will wander through the garden and find some shady corner facing north, north-east, or north-west, with an overhanging willow, laburnum, or a fruit tree, under whose shadow we intend getting lasting impressions of friends who may be here to-day but to-morrow we know not where. Having found our corner and taken possession, we will add to it a rough garden-gate covered with virgin cork, or a field-stile with a shrub on either side, or a bit of imitation rockery, or a wire-table with drooping ivy, and a few flowers, not mathematically arranged but better in a careless manner; and when we are satisfied then our next and most important work is to find the sitter. Let it be a lady, and if our own sister we will be as gracious as we should be to any one else's sister for whom we have something more than simple brotherly love, we will remember that our sisters are to others equally as interesting as their sisters are to us, and it will repay us to be gentle, patient, and kind in our little suggestions about moving your head, no laughing, keep your mouth shut, don't blink your eyes, and all this sort of thing. We shall get on ever so much quicker by going through our work slowly. It is far better to spend ten minutes in getting one good negative, than to take three pictures in twenty minutes, and not have one worth looking at. Experience is a most valuable servant, and as we proceed we shall find that every little wrinkle is of value, and by making either a pencil or a mental note of all we see and are told, we shall soon have mastered the elementary details and be in a fair way to success.

Well, we ask our fair sitter to kindly take the chair, or lean over the gate, or sit upon the stile, or recline on the rockery; the position of the face we arrange according to mutual desire; remembering that full face

is never nice in a picture, and we will so arrange our subject that one side of the face shall have a little more light upon it than the other side. All this gives roundness and beauty to the portrait. We expose the plate, giving at least twice or three times the exposure we give for our best landscapes. We develop, and our first picture is simply charming. We don't intend to have it spoiled, so we give it a thorough good washing before we let anyone see it.

If we are not the happy possessors of a garden, but have simply a small yard, then we will find a corner with same aspect, and with a little trellis work we shall be able to make a pretty small arbour ; or, if we cannot do this, then a blanket hung about four or five feet behind the sitter will make a fair background. Backgrounds ready painted are very useful where our space is limited, and we shall find that a shade over the sitter to keep off too much top light will be very useful and can hardly be dispensed with.

If we cannot find any convenient place in our yard, then we will use the clothes-horse with a blanket as background, the largest we possess, and we will so arrange it that one half is say two or three feet behind the sitter, the other half being placed at such an angle as to reflect light on to the darker side of the face ; occasionally a white sheet thrown over this half helps us wonderfully, in fact, such an arrangement and a board overhead, to keep off top light, will enable us to do really excellent work.

PORTRAITS IN THE HOUSE.

If we have not even a yard, or outside corridor, or a conservatory, then for portraits we may do fairly well in a room with a large bay window facing same direction as the nook in the garden we have just been through, and we shall require a little arrangement of light before

we shall be able to get a good portrait. Assuming that the window is on our left hand, then we will put our Camera behind the left hand side of the window, as close to the wall as we can possibly get it. The sitter we will place about two feet away from further side of window, and on the right side of sitter we must so arrange a looking-glass as to get a good amount of reflected light on to the shady side of face: another mirror suspended so as to reflect light on to the forehead will be very useful, all helping to give a good modelled face. If we cannot get mirrors, then a clothes-horse with a white sheet overhanging it will work well. This will require a little patient study, but will repay us a hundredfold in the quality of the pictures we shall obtain; what we want to obtain is a beautiful portrait appearing as it were in relief, with just the shading requisite to make it a speaking likeness.

And lastly, whatever we do, we won't make a pair of delicate 6¼ hands into 8½: we will keep them close to the body, not arranged automatically, but gracefully holding a flower, locket chain, book, fan, or what not, remembering that the nearer the hands are to the Camera the larger do they appear on the plate, and we have no desire to spoil a beautiful portrait by making the hands the centre of the picture. Let us lose everything but the face, this is the centre of the picture, the key to the whole, the index to the mind behind the face.

We won't either place a bull dog on the lap of the fair sitter to take away beauty from the most beautiful work of nature. How many pictures are spoiled by the introduction of a dog or cat to a lovely woman's portrait; let us take both, but one on one plate, one on another. "Love me, love my dog," so we will, but we will love one at a time, and the dog we will take in every attitude we can get him to arrange himself in, but we won't group the dog with our fair cousin.

GROUPS.

Groups we can manage very easily when we have succeeded with portraits, but in taking a group we will look for a spot backed by rhododendrons, laurestinus, laurels, or an ivy wall, and then with a piece of string tied to front leg of Camera, and a piece of chalk to the other end, we will mark out an arc upon the grass and ask our groupists to arrange themselves parallel to such an arc, some standing, others sitting and reclining—we won't be too particular in placing everything perfectly straight, rather drop down into the seat or lean on the shoulder of one in front, and we won't all of us stare at the amateur, nor laugh at him or chaff him. To get a good group requires not only the skill of the amateur but the kind forbearance of the groupists themselves. Having obtained this, the probability is we shall obtain a group worth keeping. If we have not any garden, then we can take a group in the yard, keeping as far away from the wall as possible, or we will cover the wall with a large piece of brown paper obtained from any carpet factor the kind of paper one lays on the floor underneath the carpet ; with such a background we can do excellent work.

We must not forget that a blue or white dress will spoil the features, the dresses coming out white and the face darker than it looks to the amateur. All light blues come out white, and the beautiful flesh tint of the healthy cheek always comes out slightly darker than it looks to the eye; the reasons of all these changes demand a study of spectrum analysis, and we have no intention of studying them to-day.

Blue Eyes are very difficult to take ; such eyes should be screened as much as possible so that they may get a less exposure than the other parts of the face. Dark eyes, and eyes well sunk into the orbits should have plenty of light, and a little blinking will not hurt the picture.

The Nose is generally crooked, only we won't tell our fair sitter so; but let us find out for ourselves which way it is bent, then if bent to the right, let the sitter turn to the left until we get the nose apparently straight, and *vice versâ*. If the nose is long we won't try a profile, but try to get nearly a full face; if the nose is turned up, we must get our Camera well above the head, and tilt the Camera downwards.

The Mouth gives expression to the whole portrait; before the cap is taken off, close the lips slowly, then whisper "prest" and leave your lips just as they are finishing the word.

The centre of attraction for our fair friends must not be either the Camera, Lens, or Amateur, but the members of the group should arrange themselves just as they would be naturally if they had three or four centres of conversation, so that no one shall have the opportunity of staring full face at the Camera. The arrangement of dress should alternate, the darkest being placed in centre, and lighter dresses towards outside.





A Winter Scene.
Taken with Instantograph.

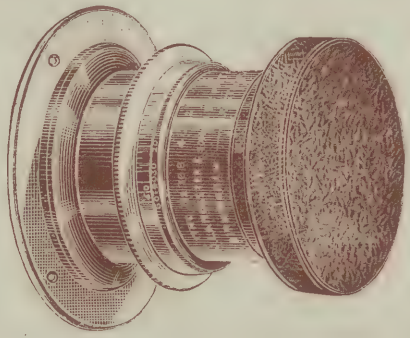
Chapter VII.

Exposing.

THIS we shall find one of the most difficult things to become perfect in. The necessary amount of exposure may be tabulated for our use, may be put down as a given amount of time for April, May or June; we may have all this worked out for us, but in the end we shall find, as others have found, that it is *experientia docet.*

In the first place we must master our diaphragm apertures; thus, an amateur, who has probably had a month or six weeks' start, will tell us that this photo. was taken with $\frac{F}{10}$ and the other with $\frac{F}{20}$, and so on; we say, dear me! it is surprising; we believe his word, but for the life of us cannot make out what he means. In the first place we soon find out that F means focus of lens, and that the divisor means the diameter of diaphragm into focus of the lens; thus as an example:—Lens 5-in. focus, diaphragm $\frac{1}{4}$-in. - $\frac{F}{20}$ that is, there are twenty quarter inches in five inches; this is charmingly simple, but our lens may be 8½-in. focus, and the diaphragm $\frac{1}{16}$in. in diameter, well, we reduce 8½-in. to sixteenths, $8\frac{1}{2} \times 16 = 136 \div 9 = 15$, so that the diaphragm is $\frac{F}{15}$, we shall of course soon find out that $\frac{F}{10}$ on one lens will take the same exposure as $\frac{F}{16}$ on another lens, and when we know this we shall be saved a great amount of trouble in calculating exposures for various lenses. All our best lenses, such as those belonging to the Instantograph and International, Rectigraph Lenses, &c., have a divided scale, &c.

Let us examine the scale in detail, and thoroughly understand its working.



The scale upon the lens above reads thus :—



Now we know that the line commencing with 10 is the aperture of the diaphragm divided into the focus of the lens, and 10, 20, 30 and so on, means $\frac{F}{10}$, $\frac{F}{20}$, $\frac{F}{30}$, and the lines between 20 and 30 are 22, 24, 26, &c., so whenever we put the arrow by rotating diaphragm, we know in an instant the exact aperture of stop, and knowing this, we can calculate the length of exposure required for any given stop ; this is, however, engraved on the top line above, and follows Time 1—2 —4—8 —16, that is, if $\frac{F}{10}$ takes one second, one tenth of a second, or whatever fraction it may be, then 2 takes twice the exposure, 4, four times, 8, eight times, and so on ; we must experiment with our largest aperture first, and then we can calculate the exposures for smaller stops.

The calculations must be based on the squares of the various apertures, thus, taking $\frac{F}{10}$ as our standard, then $10 \times 10 = 100$, and $14 \times 14 = 196 = 2$, $20 \times 20 = 400 = 4$, $28 \times 28 = 784 = 8$, and $40 \times 40 = 1600 = 16$, hence by knowing the focus and aperture, we can ascertain the exposure with ease.

But apart from the diameter of stop, &c., we have a varying factor to take into account, and that is, the amount of light or actinism at any given moment; this is a matter for experience, and it is safer to trust to our memos. of our former plates, giving time of day, brilliancy of light, and then added after, Over Exposed, Under Exposed or Right, as the case may be. Such a series of memoranda are of the highest value, and we shall do well by commencing making them with our first picture, perhaps after an experience of a twelve-month we may make a table of our average exposures as below.

APPROXIMATE EXPOSURES.

Taking our standard as $\frac{F}{10}$ and using this stop, and then calculating exposures for other stops, we shall be able to classify our exposures with ease.

				Seconds.									Min.	
$\frac{1}{50}$	$\frac{1}{20}$	$\frac{1}{10}$	$\frac{1}{2}$	1	2	4	6	10	20	30	40	50	1	2
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*	*o*

Plates used 30 times wet (ordinary).

(a) Trains, Ships, Birds flying in bright sunshine.
(b) Landscapes in bright sunshine and no foliage near.
(c) Ordinary Landscapes with foliage, bright sunshine.
(d) Ditto Ditto with heavy foliage.

If the sun is hidden then take next letter as the standard.

(e)(f) Groups out of doors in diffused light.
(f)(g) Portraits " " " "
(h) to *(j)* Interior of Fern Glens and Woods.

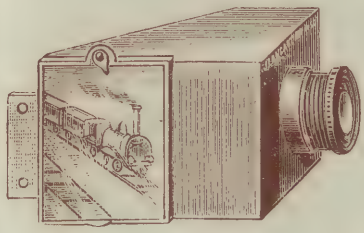
(j) to *(l)* Portraits in a window with reflector, also interior of rooms well lighted.

(n) *(o)* Interiors of Churches and rooms fairly lighted. Some Churches are very badly lighted and will take much longer exposure.

Then we must remember that the intensity of actinic light varies in each month, and taking our table as correct for May, June, July, then for April and August we must give an exposure 25% more, and March and September 50% more, the other months doubling the exposure until we reach December. The best light in the day is between 11 a.m. and 3 p.m.; before and after those hours the exposure is longer; add generally 10% for each hour in the Summer months and 25% for each hour in the Winter months.

Having now become thoroughly at home with our lens and its rapidity, we proceed to focus the image upon the ground glass. This is generally a very simple process, and yet it is often perplexing to the amateur. We must not look through the ground glass but upon it, then we shall at once see a blurred inverted image, and our attention should be drawn to obtaining the sharpest possible definition. We open the diaphragm to its largest aperture, and then focus by means of the rack or screw adjustment until in a portrait we see the hairs on the face, or the pupils of the eyes of the sitter, or in a landscape we obtain perfect sharpness to a point midway between the centre and corners of the plate. It is not wise to focus the centre of a plate only, the result being often a very sharp centre and indistinct margin, this we shall get rid of by focussing for two points midway between the centre of plate and corners. Having obtained an accurate focus, we request our sitter not to move if we are about to take a portrait.

Or, if a landscape, we are of course ready with our dark slide for the exposure, assuming that our preliminary trial is at home; let us now go back into the dark room and take out of our plate box two plates, one we place face downward in the deeper side of the dark slide, then one or two pieces of thin black cardboard, and a second plate prepared side upwards, close the slide down, fasten the clips, go back to Camera.



LANCASTER'S NEW FINDER, costing 5/-, is, for instantaneous or even ordinary work, very useful. In taking portraits the sitter would be much more comfortable if we could look in another direction when exposing the plate. Now for the time of

EXPOSING IN THE CAMERA.

This will depend upon the light, and as we have found no hard and fast line can be drawn here, *experientia docet*, we must be methodical in our work if we wish to succeed. We will now obtain our data on which to calculate exposures, and we will not waste a number of plates, but endeavour to do all we desire with one plate, and perhaps our best plan will be to focus from a bedroom window, put in the dark slide and draw the shutter out to its full limit, expose one second without shaking the Camera, then push slide in one inch, expose another second, and so on, until shutter is closed, we shall have a plate in sections of 1, 2, 3, 4 seconds exposure, and we will go back into the dark room, and, having everything ready, proceed to develop.

Chapter VIII.

Developing and Fixing.

OUR first Solutions shall be made according to the following formulæ :—

DEVELOPING SOLUTIONS.

A Solution—Pyrogallic Acid, 24 grains.
Distilled Water, 10 ounces.

B Solution—Ammonia, ½ ounce.
Bromide of Potassium, 30 grains.
Distilled Water, 2 ounces.

Other developing solutions we shall be able to make when we have obtained good results with this one, and will wait until then before we attempt to use them.

FIXING SOLUTION.

Hyposulphite of Soda, 4 oz. Distilled Water, 20 oz.

All our bottles must be clean, and should be labelled at once, and kept for their own solutions entirely. We will use these solutions for the present, and when we are sufficiently advanced to make further experiments, we will do so later on.

Before we remove a plate from the slide, we must put into the developing dish for a ¼-plate, 1-oz of **A** solution and 10 drops of **B** solution ; now we will open the slide and remove one of the exposed plates, closing slide again until ready for the other plate, then we must put it at once into the developing dish, face upwards.

Now we must watch every change, and make a mental note of everything we see. The part of plate exposed four seconds flashes up in an instant, and perhaps we are eager to fix and wash it, but "more haste, less speed;" we will let four seconds part spoil, and turn our attention to three seconds portion, this comes up quickly and then begins to go, and the two seconds portion is a longer time in coming up, but gives a bolder picture. We will continue to oscillate the solution for a few seconds, and now let us turn the plate upside down, and by reflected light examine the back of film through the back of the plate: there now! four and three seconds are black as pitch, two is just through, we can see all the detail. No. 1 shows nothing; we put back into the dish, and see! how beautiful No. 1 looks! perfectly charming!! every bit of detail visible on the surface, while No. 2 is obscured. Let us take the plate out and wash it gently for a few seconds, then put it into the

FIXING SOLUTION.

This we have made of the strength of 2-oz. Hypo. to 10 oz. water: we put the plate into it and leave it until the whole of the bromide is dissolved. We shall find that plates containing chloride will require a longer time in the fixing solution. However, we will curb our haste, and wait until the plate appears perfectly clear, then we will remove it, and let it have a good washing. The simplest way is to leave the plate in water all night, or at any rate four or five hours, until the Hypo. is thoroughly eliminated, then we will remove the plate and place it in a rack, or leaning against a shelf with the bottom corner on a piece of blotting paper to dry spontaneously, remembering that we must never attempt to dry a plate by heat.

Now let us examine the result: four seconds, quite opaque; three seconds, image can be seen but detail is obscured; two seconds, beautiful light and shadow, and all detail splendidly brought out; one second, that charmed us on the surface, has sickened and become very pale. Conclusions: four and three much over exposed; two, exactly right; one, only half exposed. We shall now be able to go to work at once and take a good negative. We have gained an experience that, as a rule, twelve wasted plates give; we have not wasted one plate. We now know that an over-exposed plate flashes up and goes black in a remarkably short time; that a correctly exposed plate takes time to develop, and that an under-exposed plate takes a long time to appear, and in spite of all our nursing goes into a decline forthwith, and is only fit for the waste box.

We shall find at first that the dishes are apt to go wrong, the one we put developing solution in will get out of its place and *vice versâ*, so that it will be better in starting to use dishes of a different size, using ¼-plate for developing ¼-negatives, and ½-plate for fixing solution, and then to have a large dish to wash in until we can procure an "Hiero" washer for plates or prints. When necessary to dry a plate hurredly, first soak it in Methylated spirits for 5 minutes, drain off, and then dry before gentle heat.

Now, assuming that we have been successful with our first essay in development, it will be an easy matter to make fresh trials with fresh developers. We shall follow the course adopted by so many amateurs when unsuccessful, in laying blame, not on ourselves, but on the plates or developers; however, we have now so many developers that it is impossible to say which one we shall be able to work best, and, by carefully experimenting, then we shall find a developer that in our hands may give excellent results.

PYRO. DEVELOPERS.

(1)	**A**—Pyrogallic Acid	10 grains.
	Distilled Water	5 ounces.
	B—Ammonia ·880	2 drams.
	Bromide of Ammonium	4 scruples.
	Distilled Water	20 ounces.

To Develop, mix 1 A to 1 B.

(2)	**A**—Pyrogallic Acid	½ dram.
	Distilled Water	10 ounces.
	B—Ammonia ·880	4 ounces.
	Bromide of Potassium	5 drams.
	Distilled Water	10 ounces.

To develop, soak the plate in water for a few seconds, then flood with a small quantity of **A**. After it has flowed backwards and forwards, put into a dish a little more **A** and 5 drops **B**, then put plate in and oscillate gently, adding more drops of **B** as required; generally 18 to 20 drops in all of **B** will bring out a good negative.

(3)	**A**—Pyrogallic Acid	½ ounce.
	Glycerine	½ ounce.
	Alcohol	3 ounces.
	B—Bromide of Potassium	½ dram.
	Ammonia	½ ounce.
	Glycerine	½ ounce.
	Water	3 ounces.

To prepare for developing get two 16-oz. bottles, label them A and B, then put 1 oz. of A into the first bottle and fill up with Distilled Water, and into the second bottle put 1 oz. B and fill up with water.

To develop, take equal parts of **A** and **B**.

TOUGHENING SOLUTIONS.

In addition to the plain Alum solution, we may use the following:—

Finely Powdered Alum	4 ounces.
Common Salt	2 ounces.
Water	40 ounces.

This can be made and kept as a stock solution.

AMIDOL DEVELOPER.

Amidol	90 grains.
Sodium Sulphite	2¼ ounces.
Distilled Water	10 "

For using we must add 3 parts of water to 1 part developer, to which we may add a small quantity of Potassium Bromide : the amount may be varied according to restraining effect we require, beginning with at least 2 grains of Bromide to each ounce of Developer.

METOL DEVELOPER.

A—Metol	1 dram.
Sodium Sulphite	1 ounce.
Distilled Water	10 ounces.
B—Potassium Carbonate	½ ounce.
Distilled Water	10 ounces.

In making **A** we first dissolve the metol and then add sulphite, and for developing we use one part **B** to three parts **A**. For rapid work the developer works well, but for ordinary exposures a small addition of Bromide of Potassium is useful as a restrainer, more especially if plate has been over-exposed.

HYDROKINONE DEVELOPER.

No. 1.

Hydrokinone 64 grains.	Sulphite of Soda...350 grains.
Bromide of Potassium...12 "	Water 8 oz.

No. 2.

Hydrate of Soda...40 grains. | Water... 8 oz.

In using we mix equal parts of 1 and 2.

Another developer which has its admirers is the Eikonogen, this we make up as follows:

EIKONOGEN DEVELOPER.

No. 1.

Eikonogen ... 32 grains. | Sulphite of Soda...32 grains.
Water 8 oz.

No. 2.

Carbonate of Soda ..320 grains. | Caustic Potash...40 grains.
Water 8 oz.

This developer we also use in equal parts. Of course we must be careful to have correct weights and measures, and below we shall find those used in chemical manipulations.

EIKONOGEN AND HYDROKINONE DEVELOPER.

Sodium Sulphite ... 2 oz.	Hydrokinone ... 1 scruple.
Eikonogen... ... 1 dram.	Distilled Water...10 oz.

When completely dissolved, add Potassium Hydrate ½ oz.

When using this developer, we must add an equal part of distilled water to developer.

APOTHECARIES' WEIGHT.

SOLID.		FLUID.	
20 grains	= 1 scruple.	60 minims	= 1 drachm.
3 scruples	= 1 drachm.	8 drachms	= 1 ounce.
8 drachms	= 1 ounce.	20 ounces	= 1 pint.
12 ounces	= 1 pound.	8 pints	= 1 gallon.
1 pound	= 5,760 grains.		

The following weights are used by dealers for selling chemicals:—

AVOIRDUPOIS.

16 drams = 1 oz. 16 oz. = 1 lb.
1 lb. (avoirdupois) = 7,000 grains.
1 oz. = 437·5 grains.

DEVELOPERS FOR ILFORD PLATES.

STOCK SOLUTION OF PYRO.

Water	5½	ounces.
Nitric acid	20	minims.
Pyrogallic acid	1	ounce.

We must add the acid to the water *before* the pyro.; the solution will then keep good.

For Soft Negatives.

1. Stock Solution...	1	ounce.
Water, make up to	20	ounces.

For Dense Negatives.

Stock Solution...	2	ounces.
Water, make up to	20	ounces.
2. Carbonate of soda, crystals	2	ounces.
Sulphite of soda	2	ounces.
Bromide of potassium	20	grains.
Water, to make up to...	20	ounces.

For normal exposures take equal quantities of Nos. 1 and 2.

A UNIVERSAL DEVELOPER.

1. Hydroquinone	160	grains.
Bromide of potassium...	30	grains.
Sulphite of soda	2	ounces.
Water to	20	ounces.
2. Soda hydrate	100	grains.
Water	20	ounces.

For Developing, we use equal parts of Nos. 1 and 2.

For Lantern Plates (warm tone): One part No. 1, halff part No. 2, two parts water.

For Ilford Bromide Papers: One part No. 1, one part No. 2, one part water.

For Ilford Special Lantern Plates (black tones): Equal parts Nos. 1 and 2.



SHANKLIN CHINE, ISLE OF WIGHT.
TAKEN WITH MERITOIRE.

Chapter IX.

Failures.

REALLY we had no intention of having any failures ; we at once say that the word impossible is not in our dictionary, that the word failure does not belong to us. Some of England's noblest men and women have risen to their heights of noble character after repeated and almost overwhelming failures, and some of our best amateurs had failure after failure before they struck the royal road to success, and we must prepare for failure, for being forewarned is, they say, being forearmed, and as failure may insidiously creep into our dark room, we will be ready to get rid of it, exterminate it at the first possible opportunity. Failure may come and does come to the most methodical and clean as well as to the stupid and dirty. Failures may be classed under two heads, outside and inside : that is, failures over which we have no control, and failures of our own making.

We will take Outside Failures first ; these arise from a number of causes, as bubbles in the plate, due to bad and inferior gelatine ; sometimes plates have no good substratum to the gelatine film, then the film will split and wash off ; this we can correct by putting the plate at once into a bath of Epsom Salts in water, or sometimes a strong alum bath will be found sufficient.

Sometimes the plate is denser on one part than another, this is due to an uneven flow of emulsion during the coating of the plate ; we cannot correct this better than by a prolonged soaking in the hypo. bath. Plates as now prepared are generally fairly good, but some of the cheap and nasty plates are very annoying from defects.

We now come to Inside Failures ; these are our own making, and therefore may be cured.

SPOTS which develop quite transparent, and have a wonderful propensity to settle upon the end of a nose or upon one of the eyes of the sitter, are generally due to dust upon the plate. *Remedy*—Carefully dust the plates with a broad flat camel-hair brush before putting them into the slides.

STREAKS and SINUOUS CURVES upon the surface of developed plate are due to the uneven flow of developer when putting plate into dish. *Remedy*—Always plunge the whole plate instantly under the developer, and see that every air bubble is driven off.

STAINS, generally due to finger marks and insufficient washing. *Remedy*—Do not touch the surface of a plate with your finger, and be sure to wash well after each process.

HARD, COLD, and DULL PRINTS, due to over-exposed negatives; really most of our failures at first will be due to this cause; we make an exposure of three, four, five or so many more seconds, and get a dull heavy negative, without any contrasts, and, however much we may try to get a good print, we shall find our labour lost. *Remedy*—Time carefully all exposures, and we will commence by giving the quickest exposure, say half a second, and if we can develop this well in three or four minutes, then we have hit the exact time, if not, we will increase exposure or *vice versâ*. Exposure Meters are all very well in their way, but there is nothing in the whole world to compare with experience.



Chapter X.

Things to be Remembered.

OVER Exposure may be corrected to a certain extent by adding at once more **A** solution, and an extra drop of **B** solution to the developer.

Under Exposure hardly worth the trial, but add **B** in drops, and if at hand, an equal quantity of distilled water to the developer.

Blisters may be arrested by flooding the plate with methylated spirit, then leave it to dry.

Green Fog, caused as a rule either by bad gelatine in the plate, or bad pyro. in the developer. *Moral*—Always use fresh pyro.

Image too Dense, then flow over the plate a solution of ferric chloride, 30 grains, water 2 oz., wash and put into fixing solution. A little experience will soon teach the amateur the proper strength, etc., of solutions.

Transparent Spots, generally due to dust on the film, plates should be brushed gently with a large camel hair brush before being put into dark slides.

Rapid Plates are much more difficult to develop than slow plates. *Moral*—Begin with slow plates, go on with slow plates until you have been thoroughly successful, then try rapid plates, use the developing solution once only, fixing solutions over and over again.

Don't hold the plate up to the light while developing, keep it as far away as possible from the source of light.

Don't let the developing solution with plate in rest a minute, but keep oscillating the dish all the while you are developing; a speck of dust may settle, and if it does settle, it will be just on the spot where you don't want it.

Don't let the sun shine into the front of lens, or on to the dark slide, shade the former with your hand and the latter with the cloth.

Don't attempt to remove a speck of dust with your finger nail, rather swill the plate well until it is dislodged or let the plate get dry and then remove it if necessary.

Don't try to rub a stain off the paper print when in toning solution, keep your fingers clean, and pick up prints with a pair of ebonite tweezers.

Don't use one dish for everything, but have separate dishes for each solution.

Don't use the developing solution under any circumstances for more than one plate, if you do, probably a good photo. will be ruined.

Don't let your dark room get dirty or disorderly, it will make you repent it if you do.

Lastly, make haste slowly. Hurry and rush never did succeed, and never will, better be slow and sure, cautious and observant, then we are sure of success.

We should never forget that in weighing our Chemicals, we carry with us a number of approximate weights, thus :—

IN BRONZE COINAGE.		IN SILVER COINAGE.	
3 half-pennies	½ oz.	3d.	1 scruple.
3 pennies	1 oz.	6d.	2 scruples.
12 "	4 oz.	1/-	1 ½ drams.
48 "	= 1 lb.	2/-	3 drams.
		2/6	= ½ oz.

With these we can make up almost any combination.



Chapter XI.

Paper Printing.

For Paper Printing we shall require Sensitised Paper, preferably in a tin case, Chloride of Gold, Acetate of Soda, Hypo., Printing Frames, Dishes, etc. The Chemicals should be of good quality, especially the gold, and the sensitised paper should also be of the best quality, and the freshest we can obtain; bad chemicals are always a nuisance to the amateur. Having all these, we shall find that the Paper Printing is a very easy process, and one much simpler than formerly. The paper is already sensitised, and our first work is to cut the sheet up into the sizes we require, and the better way is first to get a piece of brown paper exactly the same size as sensitised paper, and fold it in every way our imagination can conceive, until we get the greatest possible number of pieces size required, then cut up the sheet of sensitised paper in like manner, and take one piece and put it into our PRINTING FRAME, with the sensitised surface of paper resting upon the gelatine surface of negative; behind the paper we will put one or two pieces of folded blotting paper, making a nice pad to keep the sensitised paper quite close to negative in every part; now we close the back of frame, and expose to a bright sky, but not in the direct rays of the sun, and we must every now and again examine the print. First we shall find a dim outline of the picture; by and by it will be very much deeper, but we must not remove the print until we find the dark shadows beginning to bronze, and the light parts getting discoloured, then we may remove the print, and if we don't want to tone them until we have printed a lot, we will simply put the prints into

a dark box, and before we tone them we must WASH the prints in several lots of water, until the water in last washing is quite clear, then we must put them into the TONING SOLUTION, and this we may make in several ways. No. 1 is about the best, and we leave the print in the toning solution until the colour goes beyond our taste, the longer the print is in the solution the darker will its colour be, but the hypo. will bring back some of the colour. We must, however, be careful not to handle the paper in any way, or let one print rest upon another, better have a pair of ebonite clips or tweezers to move them about, as every finger mark leaves a stain. Either of the other toning solutions below will give good tones; the colour of tone we shall find below the formulæ.

1—Chloride of Gold, 1 gr.; Acetate of Soda, 30 grs.; Water, 5 oz.
2— " " 1 gr.; Phosphate of " 20 grs.; " 6 oz.
3— " " 1 gr.; Bicarbonate " 4 grs.; " 6 oz.

No. 1 should be made the day before it is wanted, and will keep a long time; this gives warm tones.

No. 2 must be made up just before it is required, and gives purple to black tones.

No. 3 should be made an hour or two before use, and will not keep; this gives brown to sepia tints. No. 1 is by far the best for an amateur. Having toned our prints, then we wash them for a moment and put them into the FIXING SOLUTION of the same strength as we used for the plates. The prints we will leave in the solution from ten to fifteen minutes, then give them a good washing; better leave them under the tap all night, or make a washing trough containing wooden rails with canvas stretched across, and the prints upon the canvas held down with tapes, over which the water flows, and in the morning we will take them out, pin them to a shelf or rail, and leave them to dry.

When dry we may cut the prints to the size of a cutting glass, and mount them on cards.

There are so many different Toning Solutions that it is difficult to say which one may suit our requirements, but it is an easy matter to try a number of them and adopt the one with which we are most successful. Any of the following are excellent :—

A Solution.

Chloride of Gold	7½ grains.
Distilled Water	2 ounces.

Keep this in stoppered bottle.

B Solution.

Phosphate of Soda	¼ ounce.
Acetate of Soda	½ ounce.
Distilled Water	40 ounces.

To Tone, mix 1 dram of **A** to 4 ounces of **B**.

Another solution is made up as follows :—

Chloride of Gold	1 grain.
Carbonate of Soda	3 grains.
Acetate of Soda	1 dram.
Distilled Water	6 ounces.

Borax Toning Solution.

A—Borax	33 grains.
Distilled Water	10 ounces.
B—Chloride of Gold	5 grains.
Distilled Water	½ ounce.

We must use 8 drops of **B** to each ounce of **A** for Toning.

Another Toning Solution, to be used at once after being made, consists of—

Chloride of Gold	1 grain.
Phosphate of Soda	20 grains.
Distilled Water	6 ounces.

Mounting.

IT is well to moisten the Prints with water, blotting off the superfluous moisture with clean, dry blotting paper before mounting ; this will prevent the prints creasing. Starch, being the cleanest and safest of all mountants, should be used thick and fresh, the skin which forms on the surface should be entirely removed with a spoon. The mountant is then applied to the back of the print with a stiff brush ; the print then being laid in its proper position on the mount is covered with a piece of blotting paper, which is briskly rubbed over with the hand to exclude all air and to ensure proper contact of the print on the mount. The rubbing should be directed from the centre to the edges.

The Cutting Shapes are of the following sizes :—

Carte-de-Visite	...	3¾ × 2¼ inches	...	Price, 6d.
¼-plate View	...	4 × 3 "	...	" 6d.
Cabinet ...	...	5½ × 4 "	...	" 1/-
½-plate View	...	6 × 4¼ "	...	" 1/-
¼-plate ...	...	7½ × 5 "	...	" 2/-
¼-plate View	...	8 × 6 "	...	" 2/-

Oval Shapes may also be had :—

¼-plate,	½-plate,	¼-plate,
9d.	1/6	2/6

When the prints are quite dry they are ready for **finishing.** Much more importance attaches itself to this simple operation than many beginners usually think. We are apt at this stage to find ourselves becoming careless, probably through our enthusiasm and success of producing a good print. Even many professional photographers neglect their work at this stage. Before we enter into details we must remember that **cleanliness**

is maintained only with the utmost care. In the first place every white or light coloured spot or marking, not forming a part of the picture, must be touched out with the aid of a sable hair brush and colour ; this is technically known as **spotting.** A No. 2 Rowney's brush is best adapted in size for all kinds of touching up. The colour employed should be a mixture of ivory black or Indian ink and madder brown, mixed in proportion to match the tone of the print ; a small quantity of the white of an egg should be added to cause the colour to adhere more firmly to the surface of the print, and thus prevent the "spotting" smearing in the after operations. This preparation is best made on a small piece of porcelain or opal, and allowed to dry before using. The colour is then picked up with the point of the brush, moistened with water (and not the tongue), and applied to the spot about to be touched out. In the case of black spots, these of course would be touched out in like manner in the negative.

Although this may appear a somewhat tedious process, it well repays for the trouble expended on it. The best photograph would be spoiled by little white or black spots covering it, detracting one's attention from the subject of the picture. Should the beginner possess any artistic ability, he may be able to add a few little touches to the photograph at this stage, such as putting in detail in white drapery, etc., with good effect.

When the prints have been spotted, they are ready for **burnishing** or **rolling** ; the latter being perhaps the easier accomplished, but the gloss obtained by it is inferior to that of burnishing. However, in this chapter we will treat of both ways. The difference in the two methods being that in burnishing the print is dragged over a hot steel bar by a roughened roller ; and in *rolling*, the print is passed between two bright silvered steel rollers, on the principle of the household mangle.

In burnishing, it is essential that all moving parts be kept well lubricated ; at the same time no superfluous oil should be left that would be likely to get on the prints. The steel bar should, every time the burnisher is brought out for use, be cleaned with polishing paste, and finally polished off with a dry chamois leather. We must now light the spirit lamp underneath, and when it becomes a little hotter than we can bear our hands upon it, it is ready for use. In order to prevent the prints stopping midway through the burnisher, they must be lubricated ; the best lubricator being a small quantity of white curd soap, rubbed on each print with a clean dry piece of flannel, care being taken to rub the edges of the mount as well as the print. Should the photograph be allowed to stop whilst passing through the burnisher the result will be an ugly ridge across it. We must now adjust the burnisher until the space between the roller and the bar will just allow the print to pass through. It will afterwards be found necessary to pass the photograph through the burnisher as many as six or eight times, noting each time whether any scratches have appeared on the print, as any particle of dust finding its way on the bar will cause such markings, in which case we must clean the bar with paste as before. The hotter the burnisher is the higher the gloss it will give ; but, if too hot, it will cause the surface of the print to blister.

Now, with regard to *rolling*, the prints need not be lubricated, but simply turned between the two rollers ; after the latter have been heated to about the same degree as the burnisher. Care must be exercised here regarding cleanliness, just the same as in burnishing. Remember that the greater the heat of either the burnisher or roller, the more attention is required to keep the work clean.



TAKEN WITH INTERNATIONAL.

Chapter XII.

Vignettes and Cloud Negatives.

VIGNETTES we can easily print by putting over the negative a Vignette glass, or we can make a Vignetting card by cutting an oval out of a black card, and glueing a border of cotton wool all round the margin, then pull the cotton wool up all round like an oval cloud: this will give a beautiful Vignette. By using masks and discs we can have either a white or black background at will. A white background is obtained by putting the masks with oval cut out over the Vignette glass; then if we want a black background we can print as above, and afterwards put the oval piece over the print in the centre and print the outside as deep as we wish.

CLOUD NEGATIVES.

Nothing adds more to the beauty of a landscape than a pretty cloud effect. An appropriate sky is frequently the making of a picture, but great care must be taken to have our clouds suitably lighted, so as not to have the clouds lighted from one direction and the landscape from another. We can make an artificial cloud on our prints by painting on back of negative, but this is really never a success and not worth the time it takes. Far better wait our opportunity and on some fine day, when masses of cumulus or light streaky cirrus clouds are floating about in mid-air, take a few shots at them with our camera, using shutter at full speed. In obtaining cloud negatives, Ordinary Dry Plates and direct exposure may yield good results when the clouds are dense and stand out clearly against a blue sky, but

if the sky is hazy, or the clouds thin, it is better to use Isochromatic Plates, which give great satisfaction with or without yellow screen, and even the most delicate clouds in a clear sky being easily secured. For bold striking effects, negative should be thin and full of gradation. When we have taken cloud we want, we will carefully develop and put away until it is required for use. We will, however, make the most of our opportunity and get at least half-a-dozen good clouds. Having secured them, let us make use of one of them : we will print our landscape in ordinary way and then the outline of the sky can be carefully cut out with a sharp pair of scissors, and this mask as we will call it, can be adjusted to a nicety to cover the sky so that it will come out perfectly white ; then landscape part can be covered and sky printed in from the cloud negative to the depth required, and clouds should always be subordinate to the landscape, therefore we must not print in too heavily, in fact, in some cases the merest suspicion of clouds is quite sufficient to give a highly artistic result.

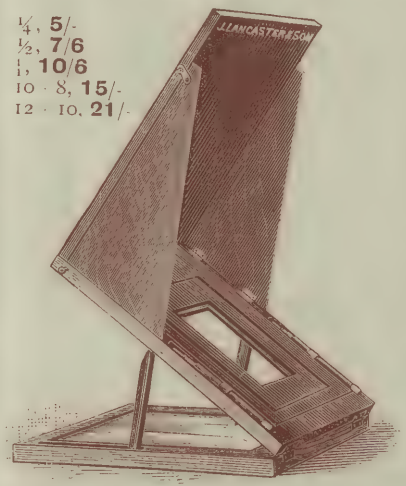
We shall find the process exceedingly simple and interesting, especially after the second or third attempt, and having succeeded we shall never turn out any composition of ours without a charming bit of cloud effect.



Chapter XIII.

Retouching.

THIS is a process often valuable in portrait work, although there are a number of amateurs who would be shocked if the question was put to them whether they had retouched the negative; however, some prefer a retouched picture, and it is as well perhaps to know something about it. For retouching we shall require several pencils, and we cannot do better than get BB, HB and HH, and we shall also require a Retouching Desk.



¼, **5/-**
½, **7/6**
¾, **10/6**
10 · 8, **15/-**
12 · 10, **21/-**

We place our negative upon the ground glass and can then commence retouching, taking care that our negative is perfectly dry; then we varnish it with any retouching varnish or medium, and work carefully with the pencil we find most suitable, varying them as we want light or dark shadows. Gelatine negatives may be often retouched without using any medium, but it is a simple process to rub the medium with a soft piece of silk carefully over the parts to be retouched, and we must work very carefully at first, perhaps simply filling in lines upon the face that may be too pronounced, and afterwards we can do a little modelling and retouching of hair, dress, etc.

CHAPTER XIV.

FORMULÆ FOR EXPERIMENTALISTS.

Developers.

ANDRESEN'S GLYCIN.

The directions for using Dr. Andresen's Glycin are as follows :—

I. *For soft development :—*

Solution A (warm slightly).

Glycin	4	parts.
Carbonate of Potash	1½	"
Sulphite of Soda (cryst.)	12	"
Water	100	"

Solution B.

Carbonate of Potash	10	"
Water	100	"

For use mix one part of **A** with two parts of **B.**

II. *For hard development :*

Glycin	5	parts.
Carbonate of Potash	25	"
Sulphite of Soda (cryst.)	25	"
Water	100	"

For use, to be diluted three times its volume.

GOLTHEIL'S ONE SOLUTION DEVELOPER.

Sulphite of Soda ...1 ounce.	Distilled water ...10 ounces.
Carbonate of Soda ...3 drams.	Eikonogen ... 1 dram.

BEACH'S DEVELOPER.

A –Pyrogallic Acid ... 1 ounce.	Sulphite of Soda 4 ounces.
Sulphureous Acid 3¼ ounces.	Distilled Water ... 4 ounces.

The Sulphite of Soda should be dissolved in the Distilled Water at a temperature of about 150 degrees, then the Acids added.

Then mix in separate bottles—

B—Sulphite of Soda	2	ounces.
Water	4	ounces.
C—Carbonate of Potash	3	ounces.
Water	4	ounces.

Then mix both together and call it **B.**

To use, add 20 drops of **A**, and 30 drops of **B**, to 1 ounce of Water, for ¼ plate.

INTENSIFYING SOLUTIONS.

A—Bichloride of Mercury	½ ounce.
Chloride of Ammonium	½ ounce.
Water	10 ounces.

Shake well until the Mercury is dissolved.

B—Ammonia	½ ounce.
Water	10 ounces.

The plate to be intensified is put into **A**, and left in for some minutes until it has a white filmy appearance, then it must be washed and put into **B** until black. The plates should be well washed and varnished.

Another intensifier may be made as follows :—

Bichloride of Mercury	½ ounce.
Water	20 ounces.

Dissolve the Mercury, then add Iodide of Potassium sufficient to cause a vermilion precipitate and to just re-dissolve the precipitate.

This may be poured over the negative until it is as dense as required.

CLEARING SOLUTIONS.

Alum	2 ounces.
Citric Acid	1 ounce.
Water	10 ounces.

The plates to be put in this solution, after washing well following fixing.

NEGATIVE VARNISH.

Gum Sandarac	2 ounces.
Oil of Lavender	1 ounce.
Alcohol	10 ounces.

RETOUCHING VARNISH.

Gum Sandarac	1 ½ ounces.
Castor Oil	2 drams.
Alcohol	10 ounces.

The gum must first be dissolved in the alcohol before the castor oil is added.

IMITATION GROUND GLASS.

A varnish made of

Gum Sandarac	1 ½ drams.
Mastic	1 scruple.
Ether	2 ounces.
Benzole	1 ounce.

will, when poured on a plain piece of glass, replace the focussing glass. A small bottle is useful on a journey.

MOUNTING SOLUTION.

Nelsons' Gelatine, No. 1	2 ounces.
Water	8 ounces.
Glycerine	½ ounce.
Alcohol	2 ounces.

The Gelatine must be dissolved in water: then the Glycerine and Alcohol in this order:

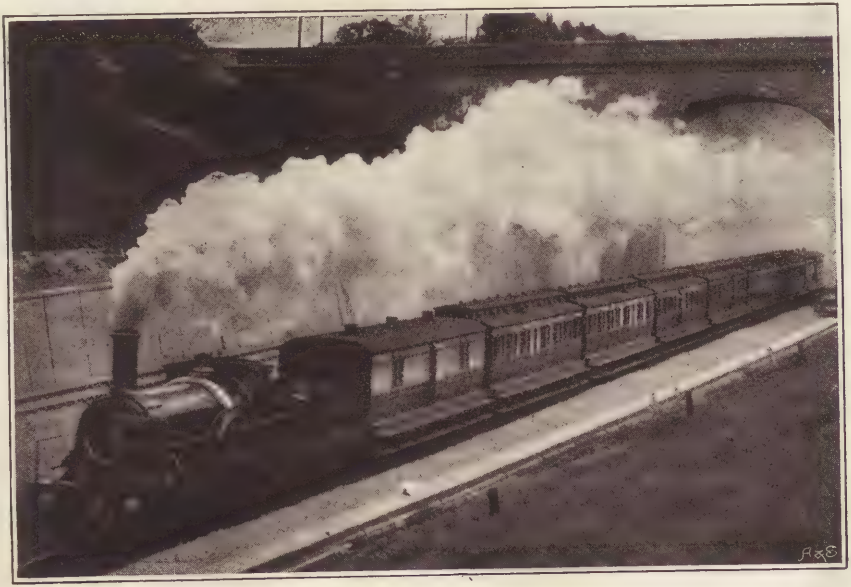
BURNISHING LUBRICANT.

Castile Soap	1 scruple.
Alcohol	10 ounces.

Gelatine Bromide Prints, developed with Eikonogen may be tinted, by immersion, in either of following solutions: first soaking in **A**, then using **G, Y, O** or **R**, according to colour required:

A Nitrate of Lead	1 ounce.
Ferri Cyanide of Potassium	1½ ounces.
Water	24 ounces.
G (green).	
Perchloride of Iron	1 ounce.
Water	10 ounces.
Y (yellow).	
Chromate of Potash	1 ounce.
Water	20 ounces.
O (orange).	
Bichloride of Mercury	½ ounce.
Iodide of Potassium	¾ ounce.
Water	16 ounces.
R (red).	
Chloride of Copper	1 ounce.
Water	10 ounces.

R Solution must be used following **Y**, that is--print first goes into **A**, then into **Y**, and lastly into **R**.

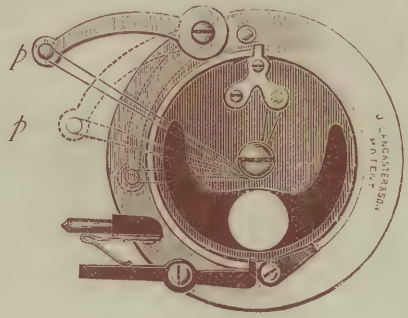


LAST RUN OF THE "FLYING DUTCHMAN" ON BROAD GAUGE.
TAKEN WITH INSTANTOGRAPH.

Chapter XV.

Instantaneous Work.

WE shall find this more difficult than slow plate work, as we have to be more careful in the development of rapid plates, still there is no more fascinating work than to take a train at full speed or to produce a good photo. of moving life, and we have first of all to be assured that our lens is equal to the demands made upon it, and, secondly, to take care that our so-called Instantaneous Shutter is quite ready

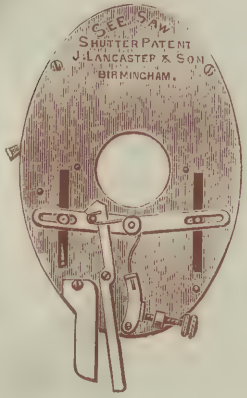


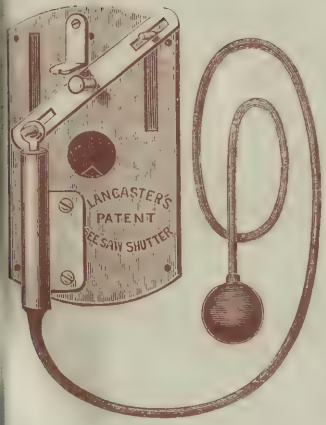
for action, and there are so many forms of shutters that perhaps it will be as well to study their design and use before we make our first shot. Let us examine a simple

but very effective shutter, and, placing it in position on Lens, we will put the india-rubber band on the peg (*p*), then focus some point in the view nearest to the object we want to take, and move the stop round until spring goes into a small click in shutter and is ready for exposing : we put in the slide, open it all the way and expose, then close the shutter of dark slide, re-set instantaneous shutter, open slide half-way and expose again.

If the half with one exposure is done well, then the exposure will do from (*p*), but if the double exposure is right then the arc carrying band must be pulled out one click only ; again, if in a brilliant light, pulled out five or six clicks or more, according to trials. With this Patent Shutter almost any exposure may be given, as bands of all strengths may be used, and two or three may be used at the same time ; an exposure of 100th of a second can be obtained with it, and down to almost anything.

When taking an instantaneous picture, we must be quite sure that no direct sunlight gets into the front of lens. The sun should really be behind the Camera, not directly behind, but giving a sharp clear shadow, not too large or pronounced. In taking a railway train we must not give it a broadside, but must stand on the side, with sun shining almost directly on to line on which train is approaching. We place Camera at an angle of say 30° from line, so that the whole of the train will be included on plate, and we will carefully focus a telegraph pole or signal post, and stand ready with release in hand to make the shot the moment the train is in position.





Other shutters may be used, and a very good one is the SEE-SAW SHUTTER, and from its name we can get an idea of its form of action. The bar or scale beam going from side to equipoised shutters, will remain at rest in any position. The upper block shows a simple form of See-Saw Shutter, with spring driving power and liberating click. The shutters are moved across, and then by pressure on small click on side the two shutters shoot across in opposite directions with great speed; the speed can be altered by the varying tension of spring; in lower block the motive power is due to air compressed by means of pneumatic release. This is an excellent form of shutter, and is completely under control.

¼, 6/6 ½, 8/6 1, 12/6

Here we have a larger model of the See-Saw Shutter, in which the shutters are both same weight, and are moved by pressure of air only in press ball. The shutters can be moved across in $\frac{1}{100}$ of a second, or may be kept up any length of time and released, and worked at any speed without the least vibration.

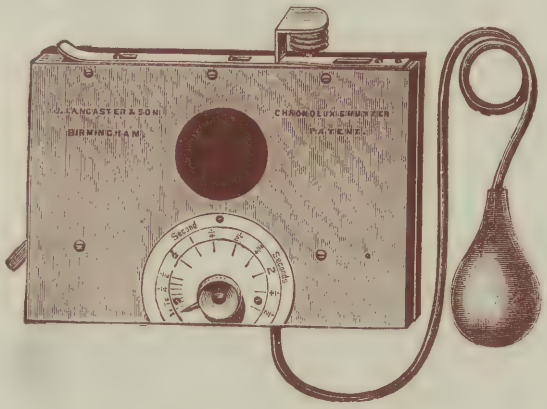


The See-Saw Shutter is one of the simplest mechanism, and the most perfect ever invented. For rapid exposure the brass plate at top is turned up, piston is pushed down, and then, by pressing ball, the shutters cross each other at any speed we like, according to pressure. For time exposures we put brass plate down, press ball, and shutter opens as in woodcut, and remains open until we release pressure on ball.

BEST FORM, WITH PNEUMATIC ARRANGEMENT.

$\frac{1}{4}$, **10/6** $\frac{1}{2}$, **12/6** $\frac{1}{1}$, **15/-** 10×8, **17/6** 12×10, **21/-**

THE NEW MODEL CHRONOLUX.



The NEW CHRONOLUX has the same mechanical arrangements as the original Chronolux, with the exception that both shutters move at the same instant, and not one after the other.

The New Chronolux opens and closes at centre, and moves without the slightest vibration ; it works from 1/4th of a second to 3 seconds, and by moving the lever on left-hand side, any length of exposure may be obtained.

To set the shutter, the lever on left-hand side is lifted up until it clicks, then the index finger is moved round to second or part of second required, the shutter is then ready for release.

The shutters are beautifully finished, gilt, and oxidized.

¼-plate, **25**/- ½-plate, **30**/- 1-plate, **35**/-

It is not at all necessary to purchase a high-priced Shutter. As a rule, we shall find the dearer ones more complicated and more easily damaged, and we can at any time make a simple drop shutter out of parts of a cigar box, or a roller blind shutter, with falling weight; or may make a shutter to suit our own particular fancy, the results are often inversely as the cost of shutter, and the simpler and more easily fitted the better for our work; and as we have now looked over several shutters, and we might continue for a twelvemonth looking at and writing about the endless variety of shutters that are now at the call of any amateur, but possessing a shutter is one thing, and taking a good instantaneous photo. another. There is more caution required in taking an instantaneous plate than in anything else. Hurry will spoil everything. Sea pictures are beautiful when just caught right; we must wait perhaps some time to get the right wave, and to get it in the right position, and it is worth all the waiting for when we have secured it. We must never work opposite a bright light, or we shall fail; better have the light at right angles, or nearer our backs than our faces. A Yacht or Steam-Boat, or a group of Swans make a beautiful picture when nicely taken. A railway train is difficult to get, but may be easily taken.

Sometimes Instantaneous Photography does not satisfy us, we then go back to slow work, and especially do ladies adhere more than gentlemen to slow, and generally more perfect work, and it repays them.

When we meet a lady amateur and discuss with her the relative merits of quick and slow pictures, she tells us that there is no haste or hurry with her in her pursuit of photography; she tells us she can carry the whole of her apparatus in an ordinary satchel, and the stand in a short case, and thus equipped she is sure of having some excellent negatives upon her return.

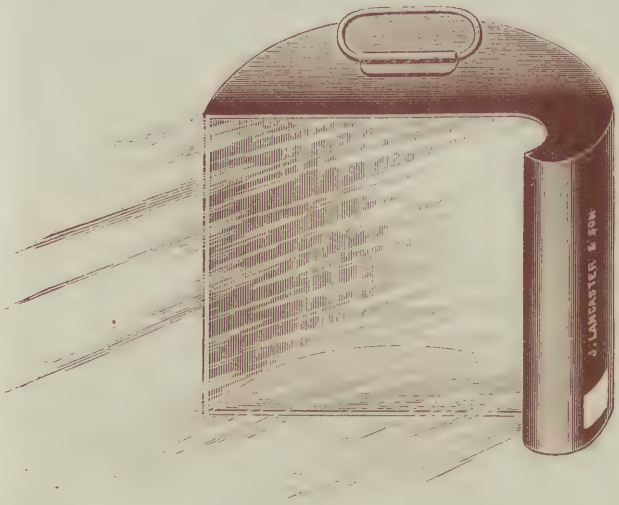


OUR NED, TOTSIE AND DOLLY.
TAKEN WITH INSTANTOGRAPH.

We listen to her, and we at last learn that with an apparatus of the highest quality, and of the least possible bulk, our lady companion can obtain charming little studies of nature's choicest bits ; she can expose plate after plate, and after the tour is ended she may develop them at her leisure, or may be some amateur of the sterner sex will only be too pleased to have the honour of developing them for her. Ladies are so full of artistic taste, and have so much patience in their work, that a picture of some fairy dell from their hands would in our work, too often appear like a used up gravel pit. An album filled by a lady would offer matter for conversation evening after evening among her friends, and the little suggestions of others, made a mental note of at the time, would spur her on to higher ambitions, and her friends would follow her in her work, and no doubt a pleasant rivalry would start into existence and drive away *ennui*, dyspepsia, and the thousand and one ailments of the fair sex. The lady amateur is ever on the look out for some new spot ; to her, no longer is time a bore, but passes away far too quickly ; to her, nature becomes far more beautiful and interesting, and the world a much happier place to live in.



WHEN the long summer nights have gone, sometimes we get out our Camera and take some almost instantaneous pictures by MAGNESIUM FLASH LIGHT. So many forms of Flash Lamps can be bought cheaply, and the results obtained are in so many instances really excellent that we may devote a moment to its consideration. Flash Lamps contain a spirit lamp with a reserve of Magnesium Powder, and this powder can be instantly blown through the flame, giving a brilliant exposure for a few seconds. With a simple form of Magnesium Lamp we can easily take photos. at night. The powder, wire or ribbon should be put into lamp, then the cap must be removed from lens, the lamp lit and moved in an arc around the head, about three feet away. Perhaps we had better experiment a little first so that we shall not make a failure : *thus*, we will cut a piece of string a yard long, hold one end by lamp and let the sitter hold the other end, then we will move the lamp in a quadrant, beginning a little on, say the left side, and going over to the right ; if we can move it from 30° on one side over to 60° on the other, we shall get a beautiful picture, especially if the string is held at an angle of 60° from the sitter. When we have accustomed ourselves to the movement of the lamp, then we will take a photo. and develop exactly in the usual way.



The woodcut illustrates a lamp which does excellent work both as a lamp for taking photographs with at night, and for enlarging purposes : the back of lamp is in the form of a paraboloid, and the end on right hand side has a strip, generally coiled, of magnesium wire, with this, when burning, we shall be able to cover a large area with a brilliant light, and shall be able to obtain a round photo. without any hard shadows ; for enlarging, we must place a piece of ground glass over negative, then light the wire, and gently move the lamp in a lateral direction.

To cover	¼	½	¼
	5/-	**7/6**	**10/**

CHAPTER XVI.

HAND CAMERAS.

THE term Hand Camera has been applied to an endless variety of Cameras, carried by means of a handle or strap, and used, as a rule, without any stand. We shall get to know their special features by examining some of them, and perhaps the very simplest

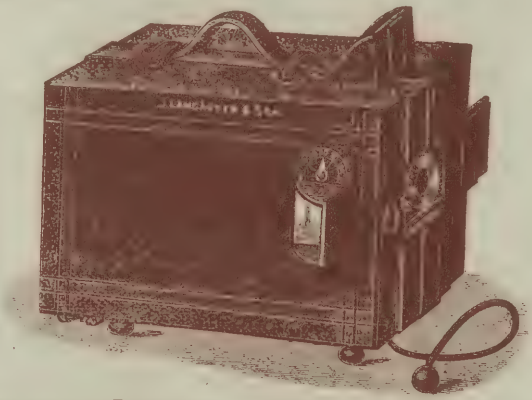


STOPIT.

form to begin with is the one in woodcut known as "Stopit." Here we have a camera body, with lens and shutter at one end ; and at the other end, exactly in focus of lens, a double dry metal slide. We shall also see a small finder on one side, on which an image of the object is reflected at the moment of exposure. Such a Camera is simple and very efficient, without any complications, and capable of really excellent work ; and as the cost is low and the apparatus very light and portable, we ought never to be without one. Of course, when going out for the day we should require more than one slide, three slides carrying six plates will be quite sufficient for a day's work.

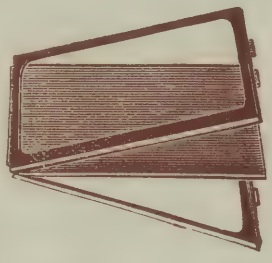
"Stopit" ... ¼-plate, **10/6**, **15/-** and **21/-**
Extra Double Slides, **2/6** each.

We will now examine another form of Hand Camera, carrying six plates and worked with very great ease.

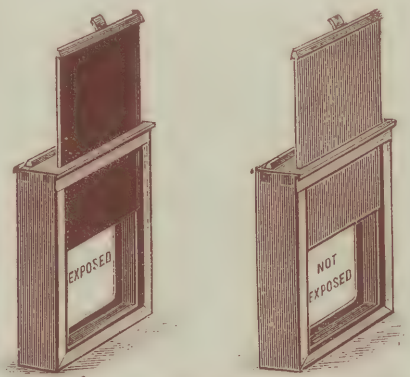


EVERYBODY'S DETECTIVE. SIMPLEST OF HAND CAMERAS.

The Omnigraph is a simple, cheap, and efficient Hand Camera. The simplicity of its mechanism, and the easy method of exposing and changing the plates have made the Omnigraph already highly popular. The Camera proper consists of a chamber having the lens and shutter at one end, and a specially-prepared roller shutter at the other end. Behind this shutter is a space which holds a changing box containing six plates in three double carriers.

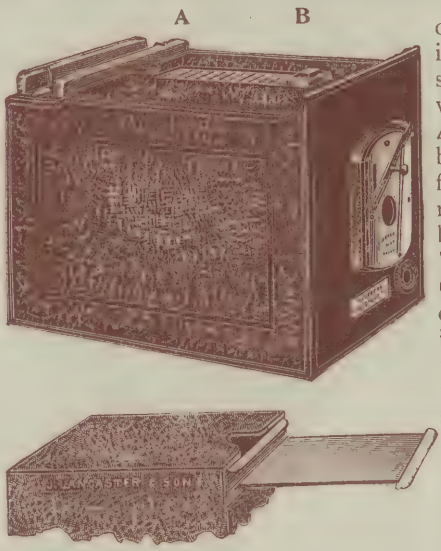


The plates are put into Lancaster's Patent Metal Carriers, each carrier being constructed to hold two plates, with a division between them; the frame is then closed and fastened by means of a sliding pin. The three carriers must then be put into changing



Changing Box, with Fawn and Black Shutters.

box, and when all are in, close both shutters, and the Omnigraph is ready for use. Of course unpacking plates and putting them into carriers and into changing box must be done in the dark room with ruby light only.



The method of exposure is exceedingly simple. The venetian shutter **A, B** is moved backwards and forwards by means of the button at **B.** When closed the Camera is cut off from changing box, and all we have to do is to pull out and push back the fawn shutter **C,** this allows one carrier to fall on to Venetian blind.

Now we slide Venetian blind to other end and back again, and carrier falls into Camera ready for exposure. The exposure may be made by moving lever of "See-Saw" shutter by finger or with an india-rubber band. Any exposure may be obtained, from a very rapid one to several hours. When the exposure is over, then the Omnigraph is turned on end, Venetian blind is rolled up, and black slide **D** of changing box pulled out and pushed back. The plate falls into changing box, and we are ready to feed in another unexposed plate. The whole process is so simple and quick that any ordinary child can put plate in position, expose, and stow plate away in a few seconds.



To recapitulate, we must proceed as follows :—

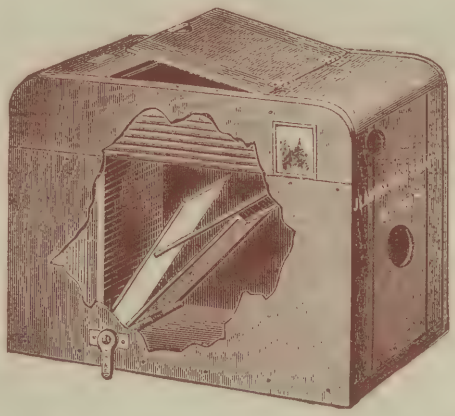
(*a*) Put changing box into Camera, *fawn* side front.
(*b*) Open and close fawn shutter.
(*c*) Open and close Venetian blind.
(*d*) Expose.
(*e*) Put changing box in Camera, *black* side front.
(*f*) Open and close Venetian.
(*g*) Open and close black shutter.

The plate that has been exposed is now at the other end of changing box, and cannot be exposed again. Although this description may seem long, the changing is performed in far less time than it takes us to read this page.

We can dispense with changing box, and have same Camera, with Featherweight Metal Slides, making a first-rate apparatus.

¼ **Omnigraph** ... **21/-, 31/6** and **42/-**
½ " ... **42/-, 63/-** " **84/-**

We now have a Hand Camera, carrying 12 Plates or Films, of excellent design to examine, and one that has given very great satisfaction. The "ROVER" is a compact, simple, and efficient Camera, and as we take it into our hands we shall at once find that it has practically three chambers: the top, in which the plates are stored before exposure; the Camera proper,



in which there is only one plate at a time; and the back into which the plates go after exposure. To change, we press button at bottom of Camera forward, this liberates one plate only, then we press button backward, and the plate falls into its place, and the exposure being made, the plate goes into chamber at back; the whole process occupying a few seconds only. The Lens and Shutter are of high quality, and will produce work of the best kind.

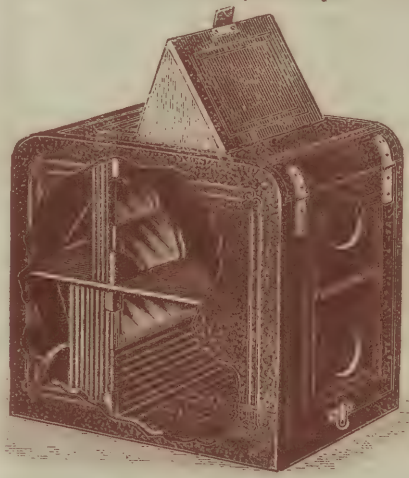
— — —

Rover, ¼-plate, **63**/- 5×4-plate, **84**/- ½-plate, **105**/-



OFF BRIGHTON.
TAKEN WITH ROVER

A later form of Hand Camera than the "Rover" is the "ZOEGRAPH." This is a new Hand Camera, carrying twelve Plates or Films in special Metal Carriers, which are carried in the lower half of Camera, and after exposure, by a simple movement of Venetian Shutter, are carried into upper half. The Lens is a very rapid one, of latest construction, with best Shutter, &c. The Finder is full size of plate, and has a Cover which only allows a small aperture for viewing image through, thus giving a bright, full-sized image of object, the moment of exposure.



THE "ZOEGRAPH" PATENT.

¼-plate, complete	...	**£3 3 0**
½ " "	...	**5 5 0**

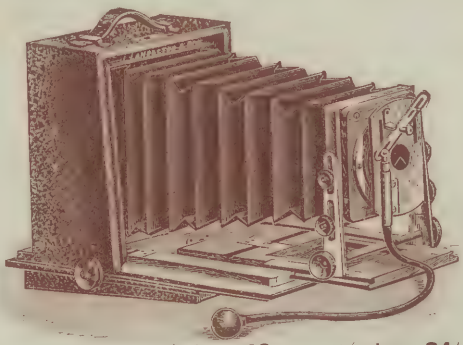
"POCKET ZOEGRAPH."

POCKET ZOEGRAPH, carrying twelve Films, 2⅛in. × 1⅝in., made to carry in the pocket. A complete instrument, with special Lens and Ever-set Shutter and Daylight Finder.

To carry twelve Films, 2⅛in. × 1⅝in.	...	**£1 1 0**
" " 3¼in. × 2⅛in.	...	**1 11 6**

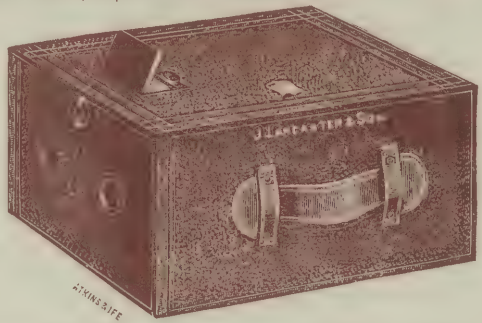
Rapid Films, 2⅛in. × 1⅝in.		**6**d. per dozen.
" " 3¼in. × 2⅛in.		**10**d. "

There are Hand and Stand Cameras combined, and one of the prettiest and most compact is the FOLDING INSTANTOGRAPH; this goes into a small compass, and we can easily open it, expose plate, and close again in a few seconds; we can either hold the Camera in our hand or fix it upon a stand.



¼-plate, **42**/ ½-plate, **84**/-

Very beautiful work can be done with a STEREOSCOPIC HAND CAMERA, and we shall find the Stereoscopic Omnigraph to be an excellent Hand Camera for



stereoscopic work. It is made in three qualities, cloth-covered with Ordinary Lenses, Superior Leather-covered with better Lenses, and Perfect Stereo Omnigraph, with Best Instantaneous Lenses, See-Saw Shutter, &c.

Cloth-covered Stereo Omnigraph	...	£2	2 0
Superior Leather " "	...	3	3 0
Perfect " "	...	4	4 0

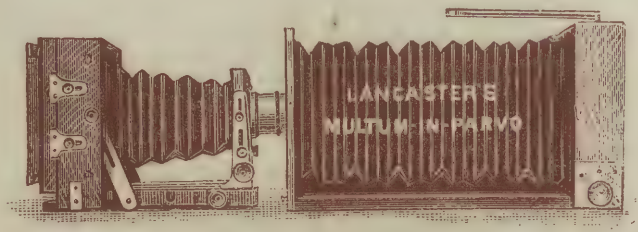
Chapter XVII.

Lantern Transparencies.



THE simplest method we can adopt for making Lantern Transparencies is to use Dry Plates in a Special Printing Frame, so arranged that the plate and negative are in contact, and that the negative may be moved up and down until the portion we wish to copy shall just fill the opening in front of printing frame; then, with dry plate in, we expose either to daylight or to gas or oil light; the developing, toning and fixing being exactly the same as in the following processes, which we shall discuss later on. The only difficulty in contact printing is the fact that we cannot reduce or enlarge the image on negative, but have to copy exactly same size. This often produces a bad effect, and really for first quality work we must have an

additional Camera to use with our own, and one of the simplest, cheapest and best is the MULTUM-IN-PARVO. We must arrange our Camera and the Multum-in-Parvo exactly as in drawing ; the negative being put into end of



¼-plate, **10/-** ½-plate, **15/.**

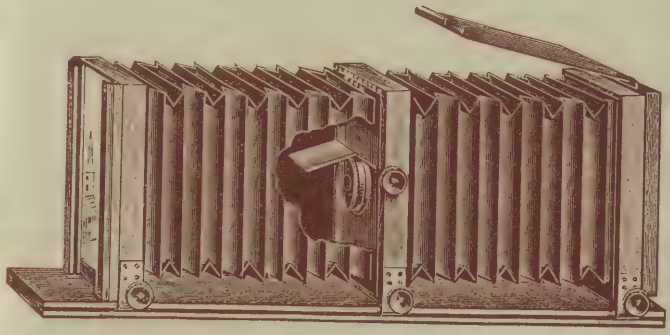
Multum-in-Parvo, and our own Camera rack out until we get a clear, crisp image the exact size we require, and it will be well to mark a ring on our focussing glass, 3 inches diameter, so that we shall not have any trouble in getting the exact size we require. When focussing, the two Cameras should be placed on a board or a large book, and inclined towards a north aspect, and the exposure made in that direction, or, if north cannot be got, then as far away from direct sunshine as possible. Lantern Slides of our own production from negatives of our own taking on some happy excursion, are a source of considerable pleasure in our "at homes" in the long winter nights, and with ordinary attention and care we shall be able to turn out excellent work.



CANTERBURY CATHEDRAL.

TAKEN WITH RECTIGRAPH.

For really fine work we cannot do better than use a Camera made purposely for Lantern Slide work, such a Camera we have in illustration. It is an excellent COPYING CAMERA for Lantern Slide work. It has a



LANCASTER'S LANTERN SLIDE MULTUM-IN-PARVO .. 21/-

special Achromatic Lens, with Shutter for exposing, Focussing Glass, Mahogany Dark Slide, and is well made in every part. With it we may have an adapter to carry larger plates; we can in this way reduce our ½-plates or larger sizes to lantern plate size, and, assuming we have our apparatus we will go to work.



The negative to be copied is placed in open end of Camera, focussed, and prepared plate put into dark slide and exposed for one second, or in dull light two seconds, or by gas-light five or six seconds, one foot away from the gas burner; then we take the slide into dark room, remove the dry plate, and place it face upwards into a dish containing water for two minutes, and while in this dish, we put into another dish as much **A** solution as will cover the plate as follows:—

A solution—Distilled Water, 10 oz.; Pyrogallic Acid, 20 grs.
B " Ammonia, 1 oz.; Bromide of Ammonium, 1 oz.; Water, 3 oz.

We will label these **A** and **B**. Then for developing add 15 drops of **B** to every ounce of **A**. We now put the plate into developing dish and allow the developer to move backwards and forwards, for say half a minute; the picture should by this time appear well-defined on the plate. The plate may be lifted out of the dish for a second and held up to the window, if not sufficiently dense, we will put it into the developer again and leave it until the picture can be seen through the back of the plate by reflected light.

Then we will wash to remove the developer, and fix in hypo. solution until quite clear. The solution should be: hyposulphite of soda, 1 oz., water, 4 oz. Swill well for a couple of minutes, or put into a dish of water and leave it until every trace of hypo. is removed.

This is a simple method of developing, but we can use any other developer, and with care we shall be equally successful.

Now we will take a gelatine chloride plate, and having gone through the same process as above, with the exception of exposure, which must be five times longer for daylight, and from three to seven minutes exposure by gas light, same distance away as with other plate; then for developing we cannot do better than use Cowan's formulæ, as follows:

DEVELOPERS.

No. 1		No. 2	
For Cold Tones.		For Warm Tones.	
Potass Citrate	136 grs.	Citric Acid	120 grs.
" Oxalate .. .	44 grs.	Ammonia Carb.	88 grs.
Hot Distilled Water ..	1 oz.	Cold Distilled Water ..	1 oz.

No. 3

For Extra Warm Tones.

Citric Acid	180 grs.
Ammonia Carb. ..	60 grs.
Cold Distilled Water..	1 oz.

To three parts of either of these add one part of the following at time of using :—

Sulphate of Iron, 140 grains ; Sulphuric Acid, 1 drop ; Distilled Water, 1 ounce.

For development, place the exposed plate in a porcelain dish and flood over with sufficient of either of the above developing solutions, keeping the dish rocking ; the time required will vary from one to ten minutes, according to the developer used and the density required. No. 1 is the quickest, No. 3 is the slowest developer.

A great variety of tones may be obtained by mixing the first and last developers together in different proportions, and altering the exposure to suit the developer.

The addition of from five to ten minims of a ten per cent. solution of Sodium Chloride to each ounce developer will considerably modify the colour and allow of much longer exposure, and is valuable when very rich warm tones are required.

The plates should develop absolutely clear in the parts that have received no exposure.

After development wash and fix in clean hyposulphite of the usual strength. Nothing further is required than to wash the plates thoroughly, and, after drying, varnish with crystal varnish if required.

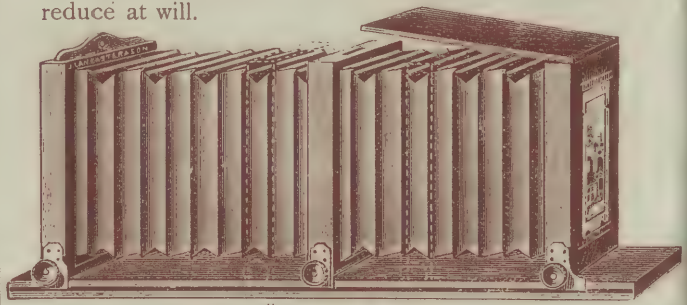
CHAPTER XVIII.

ENLARGING.

THERE is something very fascinating in reproducing a pretty bit of a ¼-plate negative on a piece of Bromide Paper 10, 20, or 30 times the area of the portion enlarged, and the difference between taking a number of ¼-plate negatives and enlarging them to only 15 × 12 and taking out a 15 × 12 apparatus for direct photos. is so great that really one wonders at the perseverance and determination of the amateur, who still carries with him his kit weighing 56lbs.

We will be satisfied with ¼-plate negatives of the highest class, and from them we will make our own enlargements, and to do this we can either use an apparatus for daylight enlarging, or an Enlarging Lantern and artificial light.

We will first discuss Daylight Enlarging, and here we have an apparatus with which we can enlarge or reduce at will.



LANCASTER'S "COMBINATION MULTUM-IN-PARVO."

The Camera has two bellows and a central division carrying Lens. The one end is fitted with Carriers, and the other has a Dark Slide to carry plate or bromide paper.

The "MULTUM-IN-PARVO" is an enlarging and reducing apparatus made in a cheap yet serviceable form for use at home; with it we can take lantern transparencies or make enlargements.

To make Lantern Transparencies we shall have to use our ordinary Camera, and place our negative in the carrier of Multum-in-Parvo; then we can, by adjusting distance of lens from plate, get any part of the subject included in our transparency. We shall find transparencies very useful in making enlarged negatives to print from.

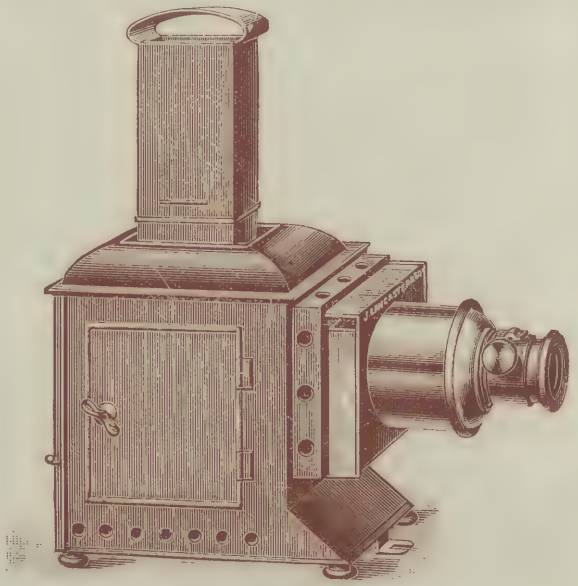
To Enlarge we must place negative in dark slide of our own camera and then draw out Multum-in-Parvo until we have the picture as large as we require it, then we put our bromide paper on back of dark slide, as in woodcut, fastening it down with mapping pins, and make our exposure as per instructions given in this chapter.

In using the Multum-in-Parvo we shall find that the best position to place Camera will be directly opposite north to north-east and inclined upwards about 45°; then we shall obtain a fine illumination without any dark shadows.

We can, during the long winter months, do our enlarging with either an ordinary magic lantern, or, far better, with an enlarging lantern made expressly for the purpose. An ordinary magic lantern will answer well if it has an achromatic object lens, and the condensers are large enough to cover all that we require of our negative. We cannot make a good enlargement from a ¼-plate negative with condensers under 5 inches in diameter.

A special enlarging lantern with 5-in. or 6-in. condensers is the best form we can use, but it is possible to do really first-class work with the Amateur's Enlarging Lantern. This lantern has a pair of best 4-in. double combination condensers, achromatic object lenses in brass mount, and has sliding adjustment for focussing.

This lantern will make an excellent enlargement up to 24 × 20, and will also exhibit our lantern slides giving a beautifully illuminated disc of at least 10 feet in diameter; the lamp, having three wicks and of most

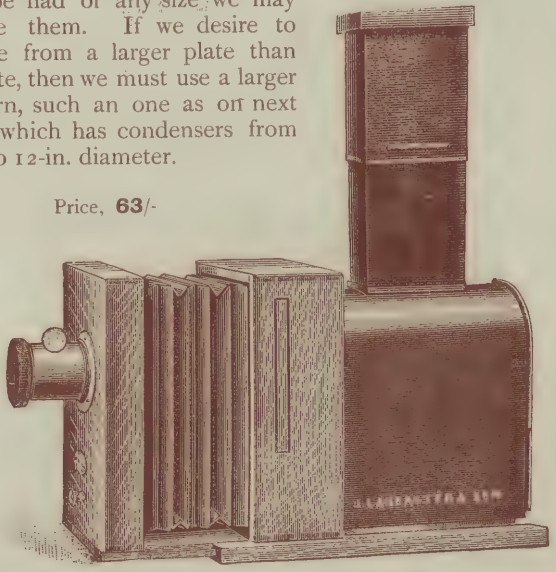


Amateur's Enlarging and Home Lantern, covers 10ft. disc. **21/-**

modern construction, gives a brilliant light. We may use an Incandescent Gas Lamp if we have gas laid on, but we must not forget that we can only enlarge that portion of the ¼-plate negative which is contained in a circle 3¾-in. in diameter, and if we want to enlarge from the whole of the plate, we must use a larger lantern, and most probably the lantern on next page will be sufficiently large for ordinary purposes.

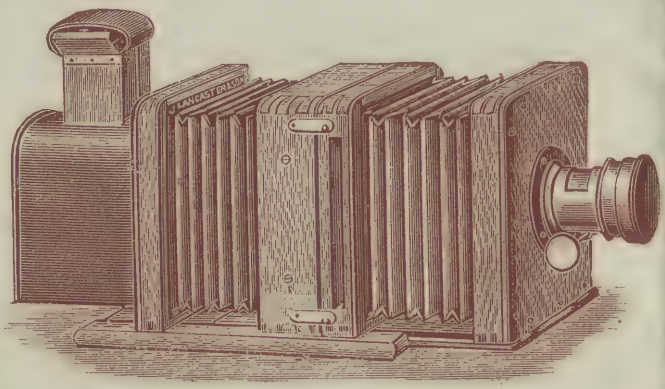
The Lantern below is one specially constructed to enlarge from ¼-plate negatives. It has 5in. double condensers of best quality, and a double combination Achromatic Objective, producing crisp enlargements. The Carrier is made to carry a ¼-plate, and carriers may be had of any size we may require them. If we desire to enlarge from a larger plate than ¼-plate, then we must use a larger Lantern, such an one as on next page, which has condensers from 6-in, to 12-in. diameter.

Price, **63**/-



Whichever Lantern we employ, the process is practically the same, and we follow the same course of procedure.

First, we must make a frame, or use a drawing board, on which we fasten our enlarging paper with mapping pins, and we take care to have each corner of this board equi-distant from centre of lens : the best way to ensure this is to put a small screw into centre of cap of lens of lantern, and tie to this a piece of string, then adjust board until string touches each corner exactly.



FIRST QUALITY ENLARGING LANTERN.

Now, upon a piece of white cardboard we focus carefully the image, and get as much of it as we require, taking care that all is square; we now put the cap on to lens and pin enlarging paper in place of cardboard and expose; the length of exposure depends upon light, and we can easily find this out by using a strip of paper say 16 inches long and 2 inches wide; on this we can expose in sections, by moving a board in front of it, thus we can move board 2 inches at the end of each ten seconds, and we shall have eight sections going by ten seconds from ten to eighty seconds' exposure. We develop, and if not exposed enough in any part, we then take another strip and expose for ninety seconds, and go on by twenty seconds each extra 2 inches, develop, and we now shall have obtained correct exposure. Now we expose our sheet of paper, and then we take it into our dark room, and put it into a dish of water, leaving it there for a minute or so while we put

into the developing dish the developing solution, made as follows :—

A—Oxalate of Potash	4 oz.
Hot Water	12 oz.
Sulphuric Acid	½ scruple.
B—Protosulphate of Iron	4 oz.
Hot Water	8 oz.
Sulphuric Acid	6 minims.
C—Bromide of Potassium	¼ oz.
Water	8 oz.

To use, we must mix the **A**, **B**, and **C** in the proportions :—48 **A**, 8 **B**, to 1 **C**, or for a small sheet of paper, say 3 oz. **A**, ½ oz. **B**, and ½ dram **C**. The paper must be put into this developer, and we watch it develop until we have it the colour we require; we then put it into the clearing solution,

Acetic Acid	1 scruple.
Alum	3 oz.
Water	10 oz.

for one minute, then we must fix it in the ordinary hypo. solution, afterwards well washing before drying, as we wash the dry plates. By the exercise of a little care, and a great deal of cleanliness, and using dishes for their own solution and no others, we can soon become expert enlargers. We can make the dishes required out of Willesden Paper, or of wood lined with shellac varnish, or even lined with ashphalte varnish.

As it is not human to rest when one has climbed the first rung in the ladder, but to go on rung after rung until we get to the top, so is it in photography. Assuming that we have a progressive brain, then we shall go on; we shall not be satisfied with obtaining a certain result one way, but we shall endeavour to do the same by some other method and altogether in a different manner, and we shall search for the cause. The grey covering matter of our cerebrum will be stored with impressions to be used, may be in large combinations of thought giving rise to some new conception, and one day we

may become famous, simply by the discovery of some simple law no one else has ever found out ; but as there is an end to everything, so there is an end to our little journey. By and by we must part companionship ; before we do so let us make up our minds not to be second best in anything we attempt, but to try to excel in everything we put our hands to, and as we go on we shall never forget the surprise and delight with which we watched the creamy film giving its first indications of the tracery of our earliest picture ; the charm never dies, each succeeding picture charms us as the doll charms the babe ; and beyond all there is a mystery which, however much we outstrip our compeers, is always present with us, and when we know all that can be known by man about the theories of colour the action of various parts of the spectrum upon different chemicals, the part played by the wave theory in the production of photographic images—when we know it all, even then the charm is not less beautiful and the pleasure not one whit more dull than when we knew next to nothing and thought we knew everything ; and now we have read all, seen all, and have apparently reached the goal, we are as far away as ever. The science and art of photography offer fields of research so wide that the keenest intellect and the sharpest eye cannot see even the dim outline of : but we must come back, my space has reached its limit, and I can only hope that what has been to me a source of infinite pleasure, will give to those who have accompanied me even a greater delight than I have experienced. I can assure them that they will find that there is no subject so interesting and no recreation so full of pleasant surprises as that of AMATEUR PHOTOGRAPHY. The dreams of youth become the commonplace facts of age, and our earliest conceptions of the possibilities of Photography are obliterated by the discoveries of modern science. No longer do we dream of Photography in colours, but we can actually gaze on the

delicate variation of tint in a bouquet of flowers or we marvel at the perfection of colouring in the casket of caramels, chocolates, and gaily tinted sugar coated fruits, and the exquisite colouring of Japanese Cloisonné Enamel; or of magnificent Satsuma-ware, giving all the beautiful and varying tints which the Anglo-Saxons of the East alone can produce. These reproductions can be made by any ordinary amateur, and at a small cost.

And again, we are met by a still more wonderful discovery, by means of which one can take a radiograph of his own bony skeleton. The "Rontgen Rays," of probably rapid vibration, can pass through the human hand, but are partially arrested by the line in the bones and so produce a silhouette of any and all the bones in their path, and thus does Photography come to the aid of surgery, revealing the hidden and lost needle or substance foreign to the body, which, when located, may be removed by a simple operation.

Who knows what will be the next revelation of Photographic possibilities. It is not the man who has unlimited means and expensive and extensive apparatus who is as a rule the most successful, but more often it is the patient hard worker of limited means, but of indomitable perseverance, whose motto is "*nil desperandum*," and who will overcome every obstacle in his path; these are the men whose names glorify and ennoble the science of which they are humble students.





ALL PRICES ARE STRICTLY NET.

ALL PREVIOUS CATALOGUES CANCELLED.

Abridged Catalogue.

APPARATUS FOR

DRY PLATE PHOTOGRAPHY

MESSRS. J. LANCASTER & SON



Caution buyers against spurious imitations of their well-known Apparatus.

Their registered Trade Mark upon every Camera, Slide Lens, Stand, &c., sent out by them is a guarantee of good quality.

INFRINGEMENTS WILL BE PROSECUTED.

ALL ORDERS MUST BE ACCOMPANIED BY A REMITTANCE.

POST OFFICE ORDERS PAYABLE TO

J. LANCASTER & SON, GENERAL POST OFFICE, BIRMINGHAM.

CHEQUES CROSSED

"BIRMINGHAM DISTRICT & COUNTIES BANKING CO."

WE ARE COMPELLED TO ADHERE STRICTLY TO THIS RULE; OUR PRICES ARE TOO LOW TO ALLOW OF BOOKINGS, &C.

SPECIAL NOTICE.—*We do not pay Carriage nor send goods by Parcel Post, unless an amount sufficient to cover Carriage or Post is enclosed with order.*

"Le Merveilleux"

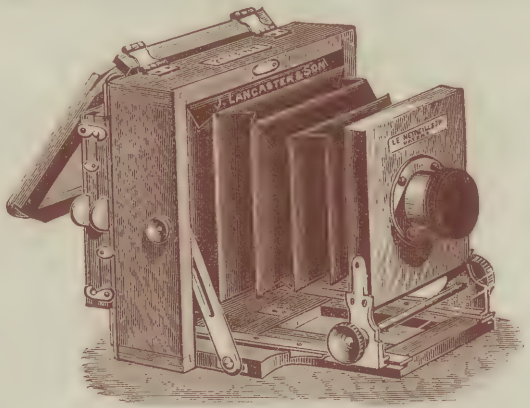
(PATENT)

THIS is a capital Camera, with bellows body. The Focussing slide is hinged, and folds over on the top of Camera. The Slide reverses in an instant, so that a vertical or horizontal Photo. can be taken without moving any part of the Camera.

THE LENS is a Meniscus Achromatic one, giving excellent depth, and covering the plate all over from corner to corner. With this apparatus there is a Portable Camera Stand and Brass Top.

A Most Compact Apparatus.

LIGHT. STRONG. DURABLE. **NO LOOSE PARTS.**



OPENED AND CLOSED IN AN INSTANT.

Each Set consists of Camera, Double Dry Slide, Lens and Stand.

300	"Le Merveilleux"	for ¼-plate ...	£1	1 0
302	"	" ½ " ...	2	2 0
304	"	" ¾ " ...	3	3 0
305	"	" 10×8-plate	4	4 0
306	"	" 12×10 "	5	5 0
307	"	" 15×12 "	6	6 0

Extra Slides		¼	½	¾	10×8	12×10	15×12
308	Double Dry Slides .	5/6	10/6	18/-	25/-	35/-	40/-
309	Wet Plate Slides ..	5/-	10/-	16/-	21/-	30/-	35/-
	Carriers		1/6	2/6	3/-	3/6	4/-

Colmore Row, Birmingham.

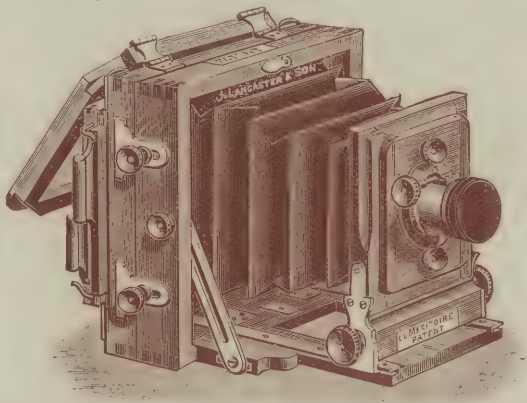
"Le Meritoire"

(PATENT)

"LE MERITOIRE" is an excellent apparatus. It has a very good Lens in Rackwork Mount. The Camera has Double Swing Back. The Slide reverses in an instant from vertical to horizontal, without moving any part of the Camera. The Stand belonging to "Le Meritoire" has a brass top and brass clips. The Swing Back is most essential when the Camera is required for Architectural work, and also the Rising Fronts are indispensable for the same kind of work in fact, it is impossible to get true Architectural lines unless we have both the Swing Back and Rising Front.

Universal Front.

Very Light and Portable.



Double Swing.

No Loose Parts.

Each Set consists of Camera, Double Dry Slide, Lens, and Stand.

310	"Le Meritoire"	for ¼-plate ...	£1	11 6
312	"	" ½ " ...	3	3 0
314	"	" ¼ " ...	4	10 0
315	"	" 10×8-plate	6	0 0
316	"	" 12×10 "	7	10 0
317	"	" 15×12 "	8	10 0

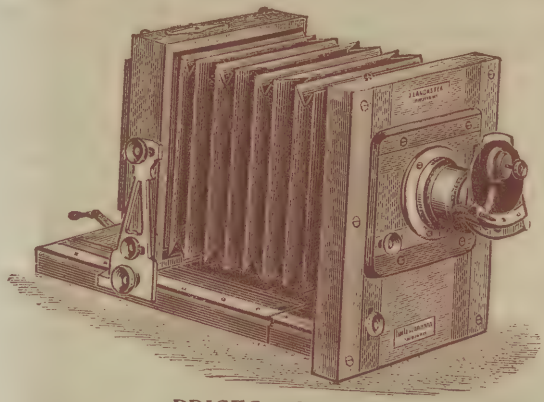
Extra Slides -	¼	½	¼	10×8	12×10	15×12
318 Double Dry Slides .	5/6	10/6	18/-	25/-	35/-	40/-
319 Wet Plate	5/-	10/-	16/-	21/-	30/-	35/-
Carriers		1/6	2/6	3/-	3/6	4/-

The "International"

(PATENT)

THIS is an excellent Apparatus—very compact—closing to about two inches. It has a Folding Tail Board, Patent Reversing Frame and Slide Holder, Double Swing, Rising and Cross Fronts, etc. The Lens is an Instantaneous one, with Patent Shutter and Patent Diaphragms, giving any aperture that may be required, and showing, at a glance, the diameter of Stop, ratio of aperture to Focus, and speed of same. Mahogany Stand with Brass Top.

THE "INTERNATIONAL" is a Camera which has given great satisfaction. It is strongly built, well put together, and in every way is a perfect Apparatus.



PRICES, Complete.

330	¼ (4¼ × 3¼)	...	...	...	£2	10	0
332	½ (6½ × 4¾)	...	...	...	5	0	0
334	...	1 (8½ × 6½)	...	...	7	10	0
335	...	10 × 8	...	...	9	9	0
336	...	12 × 10	...	...	11	11	0
337	...	15 × 12	...	...	13	13	0

If with RECTIGRAPH LENS and SEE-SAW SHUTTER in place of Instantaneous Lens and Shutter.

Extra Cost—	¼	½	1/1	10×8	12×10	15×12
	£1 2 6	1 17 6	2 7 6	2 17 6	3 15 0	4 10 0
Extra Slides—						
Double Dry	0 7 6	0 12 6	1 0 0	1 8 0	2 0 0	2 5 0
Carriers		1/6	2/6	3/-	3/6	4/-

Colmore Row, Birmingham.

"Instantograph" Complete Outfit.



Complete Outfits (C) *for Negatives, Prints, &c.*

Each Set includes Camera, Lens, and Three Double Dry Slides.

THESE Sets consist of the Camera, Lens, Stand, Three Double Dry Slides, Two Dozen Plates, Ruby Lamp, Six Dishes, Printing Frame, Scales and Weights, Sensitised Paper, Large Stock of Chemicals, Vignette and Cutting Glasses, Measures, Plate Box, Compound Focusser, etc., in Polished Cabinets.

320 c	Complete Outfit, ¼-plate	...	£4 4 0
322 c	" " ½ "	...	7 7 0
324 c	" " ¼ "	...	10 10 0
325 c	" " 10×8 plate	...	14 14 0
326 c	" " 12×10 "	...	20 0 0

If with RECTIGRAPH LENS and SEE-SAW SHUTTER, in place of Instantaneous Lens and Shutter:—

Extra Cost	¼	½	¼	10×8	12×10	15×12
	£1 2 6	1 17 6	2 7 6	2 17 6	3 15 0	4 10 0

Colmore Row, Birmingham.

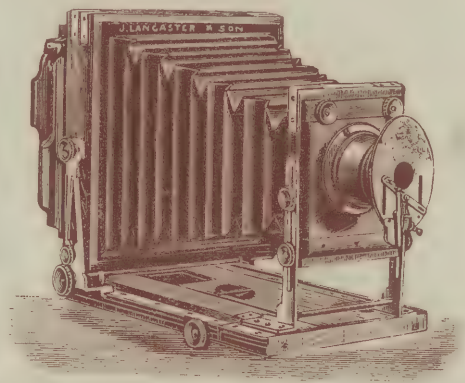
The "Special Brass-Bound Instantograph"

Is of Best Quality & Finish.

(PATENT)

THIS is a High-Class Camera, Brass-Bound, with Double Swing and Folding Tail-Board closing over and protecting Focussing Glass when carrying.

LIGHT AND STRONG. VERY COMPACT.



DOUBLE SWING. LONG EXTENSION.

Each Set consists of Camera, Slide, Lens, Shutter and Stand.

S 320	PRICE, complete, for ¼-plate ...	£2	10 0
S 322	" " " ½ " ..	5	0 0
S 324	" " " 1/1 " ...	7	10 0
S 325	" " " 10×8 plate...	9	9 0
S 326	" " " 12×10 " ...	11	11 0
S 327	" " " 15×12 " ...	13	13 0

With RECTIGRAPH LENS and SEE-SAW SHUTTER in place of Instantaneous Lens and Shutter.

¼	½	1/1	10×8	12×10	15×12
£3 12 6	6 17 6	9 17 6	12 6 6	15 6 0	18 8 0

Extra Slides, Brass-Bound.

¼	½	1/1	10×8	12×10	15×12
9/6	14/6	23/-	30/-	42/-	50/-

Colmore Row, Birmingham.

Lancaster's Photographic Apparatus.

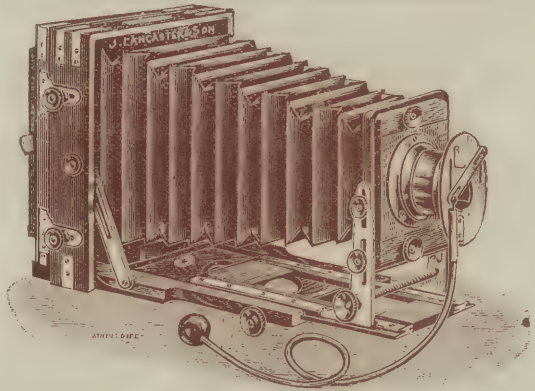
THE "Aluminium Mounted Instantograph"

THIS APPARATUS IS ABOUT AS

PERFECT, PORTABLE, and LIGHT

AS IT IS POSSIBLE TO MAKE ONE.

The Amateur's Delight and Constant Companion.



THE CAMERA is made out of selected Mahogany, of the smallest possible size, with a due regard to strength. It has Aluminium Binding; Aluminium Front Stage; Plates; Screws; &c. It has Rising Front; Double Swing Back; Long Extension; Reversing Back; and all recent improvements.

THE LENS is a specially selected one, mounted in Aluminium, and has our Patent Aluminium See-Saw Shutter.

THE STAND has an Aluminium Top, and the whole apparatus is perfect and complete.

	¼	½	1/1
Camera, Slide, Lens, Shutter, and Stand	£3 3 0	£5 10 0	£8 0 0
Extra Slides, Aluminium Bound	10 0	15 0	1 5 0
Sets of Chemicals for Negatives and Prints, &c.	11 6	1 5 0	1 15 0

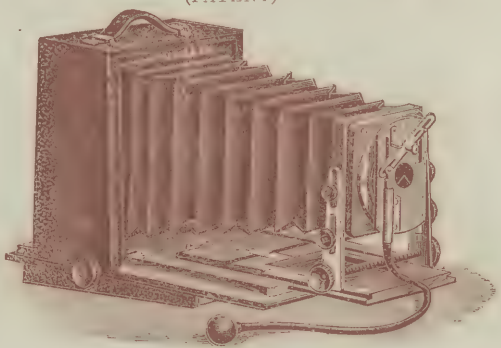
If with Aluminium Rectigraph Lens, and Aluminium See-Saw Shutter, in place of Instantograph Lens, &c.

¼	½	1/1
£1 10 0	£2 10 0	£3 10 0

Colmore Row, Birmingham.

The "Folding Instantograph"

(PATENT)



OPEN.

THE "FOLDING INSTANTOGRAPH" has Double Swing Back, Rising Front, Best Lens, and See-Saw Shutter, and Portable Stand.

The Camera is made of Mahogany and polished, or covered in best Leather as above. Both forms close into the smallest possible compass, and although light, are very strong and durable.



CLOSED.

COMPLETE SETS—

Camera, Lens, Shutter, Slide and Stand.

¼	½	1/1
£2 2 0	£4 4 0	£6 6 0

Extra Slides—

7 6	12 6	1 0 0

COMPLETE SETS FOR NEGATIVES & PRINTS

Sets including :—
CAMERA, LENS, SHUTTER, SLIDE and STAND, and a good supply of CHEMICALS, PLATES, SENSITISED PAPER, PRINTING FRAME, &c., &c.

¼	½	1/1
£2 13 6	£5 7 0	£8 1 0

If with Rectigraph Lens and See-Saw Shutter, in place of Instantaneous Lens and Shutter:—

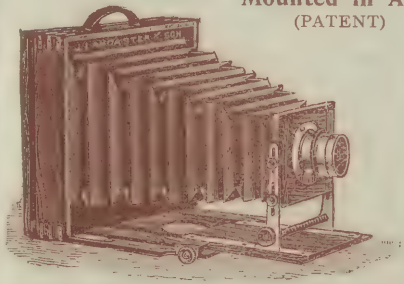
Extra —¼, £1 2 6 ½, £1 17 6 1/1, £2 7 6

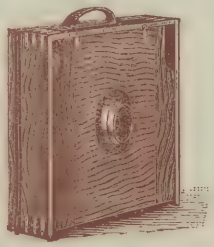
Colmore Row, Birmingham.

. . . THE . . .

"Pocket Instantograph"

Mounted in Aluminium.
(PATENT)





THIS is a portable form of Instantograph—excessively light—but at the same time very firm. It has Aluminium Binding, Runners, Front Stage, etc.

THE LENS is very rapid, and is mounted in Aluminium, and has a Patent Aluminium Shutter. **THE STAND** is a new pattern, with Aluminium Top and Fittings, and is the lightest and most portable Stand made. The Camera, Lens, Shutter, and Three Double Dry Slides are carried in a Leather Case, with Lock and Key, and form altogether a most beautiful set. The Double Slides (¼-plate) weigh two ounces each, and three are included in each set.



Pocket Instantograph,
including :—
Camera, Lens, Shutter, Three Aluminium Bound Slides, Leather Case, and Aluminium Mounted Stand.

¼	½	1
£4 4 0	7 7 0	10 0 0

Ditto with **Rectigraph Lens,** mounted in Aluminium.

5 10 0 10 0 0 13 10 0

Colmore Row, Birmingham.

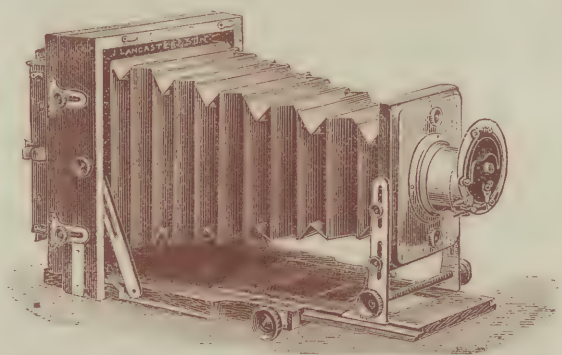
The "Instantograph"

(PATENT)

UNIVERSAL OPINION:—"Everything an Amateur can desire."

THIS Apparatus is useful for all kinds of work—Instantaneous Pictures, Portraits, Groups, Landscapes, Architectural and Engineering subjects, &c. The Lens is a most rapid type, and has Patent Instantaneous Shutter working with the greatest rapidity; also Patent Adjustable Diaphragms. The Camera is beautifully made and folds up into the smallest possible compass. The Tail Board opens out of Camera, and the Lens front slides out and clamps. Fine Adjustment is obtained by Rackwork. The Bellows in the "Instantograph" are made of Leather, and the Apparatus—of which, by the way, over 70,000 have been sold—is pronounced the *sine qua non* of the Amateur Photographer. The Stand is of Polished Mahogany, with a Brass Top.

Will take Vertical or Horizontal Photos.



Each Set consists of Camera, Slide, Lens, Shutter, and Stand.

PRICES, Complete.

320	"Instantograph" for ¼-plate ...	£2	2 0
322	" " ½ " ...	4	4 0
324	" " 1 " ...	6	6 0
325	" " 10 × 8-plate	8	8 0
326	" " 12 × 10 "	10	10 0
327	" " 15 × 12 "	12	12 0

Extra Slides	¼	½	1	10 × 8	12 × 10	15 × 12
328 Double Dry Slides ..	7/6	12/6	20/-	28/-	40/-	45/-
329 Wet Plates	6/-	11/-	17/6	24/-	34/-	38/-
Carriers	-	1/6	2/6	3/-	3/6	4/-

Colmore Row, Birmingham.

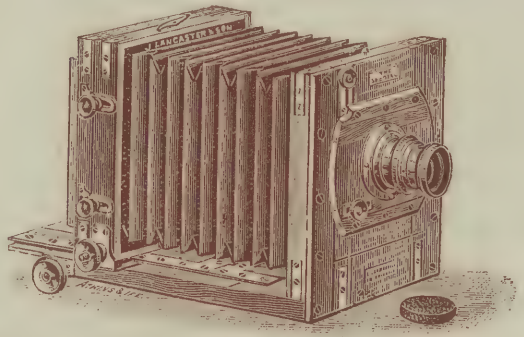
LANCASTER'S

Improved Special Sets.

(PATENT).

Rapid Rectigraph Lens, in B and C Sets.

VERY LIGHT, STRONG, AND PORTABLE.



FIRST QUALITY SETS. —Lancaster's Special Camera—

Brass Bound Double Dry Slide; Instantaneous Lens; with Patent Adjustable Diaphragms; Instantaneous Shutter; and best Mahogany Folding Stand, etc.

338A	339A	340A	341A	342A
¼	½	1/1	10×8	12×10
£4 0 0	6 0 0	8 0 0	10 0 0	12 12 0

Lancaster's Patent Camera, etc., etc., as above, but having Rectigraph Lens, and Lancaster's Patent See-Saw Shutter, in place of Instantaneous Lens and Shutter. *This is a perfect Camera and Lens.*

338B	339B	340B	341B	342B
¼	½	1/1	10×8	12×10
£5 0 0	7 10 0	10 0 0	12 12 0	15 0 0

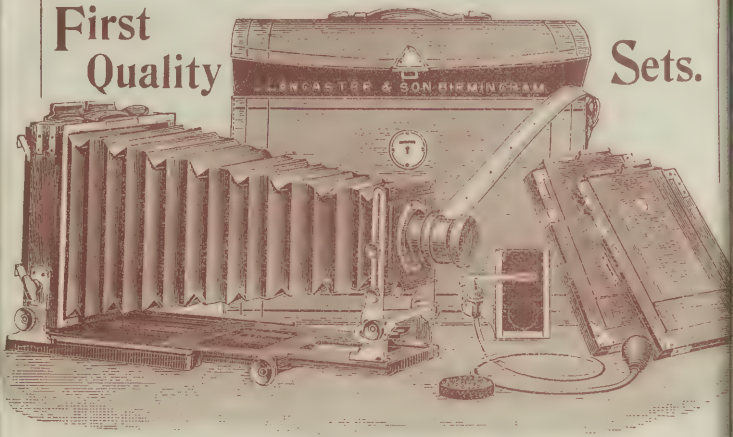
FIRST QUALITY COMPLETE SETS, *including:—*

Lancaster's Patent Camera, Double Swing, etc., etc.; Three Brass-Bound Double Dry Slides; Best Camera Stand; Rectigraph Lens; Best Leather Case (for Camera, Lens, Instantaneous Shutter and Three Slides), Lancaster's Patent Ruby Lamp; Three Ebonite Dishes; Plates; Scales and Weights; Measures; Vignette Glass; Printing Frame; Cutting Shapes; Light-tight Plate Box; Compound Focusser; Sensitised Paper; and large stock of Chemicals in Stoppered Bottles etc.

338C	339C	340C	341C	342C
¼	½	1/1	10×8	12×10
£8 8 0	12 12 0	16 16 0	21 0 0	25 0 0

Lancaster's Photographic Apparatus.

First Quality Sets.



Lancaster's Extra Special Patent Camera.—Brass Bound; Double Dry Slide; Instantaneous Lens, with Patent Adjustable Diaphragms; Instantaneous Shutter; and Best Mahogany Folding Stand; Leather Bound Case to carry Camera; Lens and Slide, etc.

¼	½	1	10 × 8	12 × 10	15 × 12
Ex. S A	Ex. S A	Ex. S A	Ex. S A	Ex. S A	Ex. S A
£4 4 0	6 6 0	8 8 0	10 10 0	12 12 0	14 14 0

Lancaster's Patent Camera, &c., &c., as above, but having Rectigraph Lens, and Lancaster's Patent See-Saw Shutter, in place of Instantaneous Lens and Shutter. *This is a perfect Camera and Lens.*

¼	½	1	10 × 8	12 × 10	15 × 12
Ex. S B	Ex. S B	Ex. S B	Ex. S B	Ex. S B	Ex. S B
£5 5 0	7 17 6	10 5 0	12 15 0	15 0 0	18 0 0

FIRST QUALITY COMPLETE SETS, INCLUDING:

Lancaster's Extra Special Patent Camera.—Three Brass Bound Double Dry Slides; Best Camera Stand; Rectigraph Lens; Best Leather Case for Camera; Lens; Instantaneous Shutter and Three Slides; Lancaster's Patent Ruby Lamp; Three Ebonite Dishes; Plates; Scales and Weights; Measures; Vignette Glass; Printing Frame; Cutting Shapes; Light-tight Plate Box; Compound Focusser; Sensitised Paper; and large stock of Chemicals in Stoppered Bottles, etc.

¼	½	1	10 × 8	12 × 10	15 × 12
Ex. S C	Ex. S C	Ex. S C	Ex. S C	Ex. S C	Ex. S C
£8 8 0	12 12 0	16 16 0	21 0 0	25 0 0	30 0 0

Colmore Row, Birmingham.

The "Ladies'" Camera

(PATENT)



Folding up like a Reticule.

THIS APPARATUS has been specially designed for Ladies. It is entirely free from complications, and—although strong—is extremely light and portable. The Apparatus consists of an excellent Portable Camera with folding Tailboard; Patent Reversible Back changing from vertical to horizontal in an instant, thus enabling a vertical or horizontal photo. to be taken at will, without moving the Camera; Rising Front, &c.; excellent Achromatic Lens with Iris Diaphragms for Portraits, Groups, and Views; Triple Folding Stand, &c., &c.—making the most portable and complete Apparatus a lady can possibly have.



¼-plate, **42**/- ½-plate, **84**/- ¼-plate, **126**/-

Consists of Camera, Double Dry Slide, Lens, Shutter, and Stand.

Extra Slides—¼-plate, 7/6 ½-plate, 12/6 ¼-plate, 20/-

Colmore Row, Birmingham.

The "Boy's Own" Set



HAVING been repeatedly asked for a Cheap Camera for Boys at School, of guaranteed quality, they have made up the Sets as above, which consist of Polished Mahogany Camera with single Dark Slide; Achromatic Meniscus Lens, covering the plate all over; Ruby Lamp; Printing Frame; Dishes; Plates; Chemicals for Negatives and Prints; Sensitised Paper, etc. All fitted in Travelling Case, with Straps. They do not separate the Sets, but sell them complete with Book of Instructions.

Complete Sets—for Negatives and Prints.

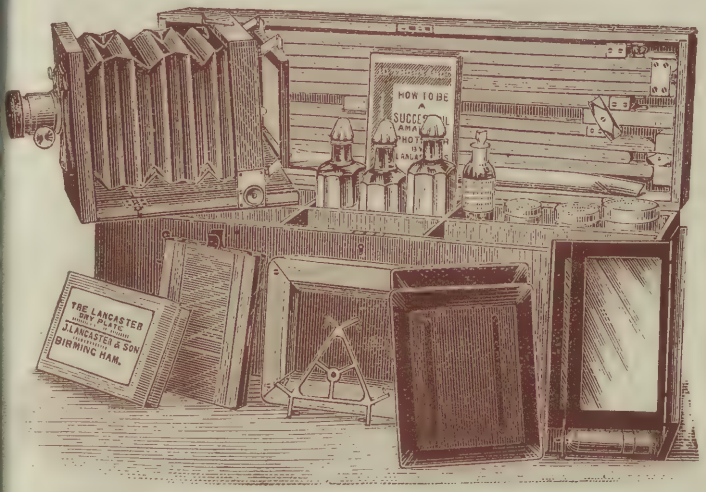
¼-plate, **£1 1 0** ½-plate, **£2 2 0** 1/1-plate, **£3 3 0**

Extra Slides—

	¼	½	1/1
Extra Slides	4/-	7/6	10/6
" " Double Dry	5/-	9/-	13/-
Carriers	—	1/6	2/6

Colmore Row, Birmingham.

The "Amateur's" Camera



THE AMATEUR'S COMPLETE OUTFIT consists of Mahogany Camera, with Folding Tailboard and Patent Reversing Back; Best Lens; Three-fold Stand; Chemicals; Plates; Dishes; Patent Folding Ruby Lamp; Printing Frame; Sensitised Paper; Toning and Fixing Solutions; Cards; Cutting Shapes, &c., &c., with Book of Instructions, in Polished Box with Lock and Key.

PRICES, Complete.

¼	½	1/1		
4¼ × 3¼	6½ × 4¾	8½ × 6½	10 × 8	12 × 10
£2 10 0	4 4 0	6 0 0	7 10 0	9 0 0

Extra Slides—	¼	½	1/1	10×8	12×10
Double Dry.. ..	5/6	10/6	18/-	25/-	35/-
Wet	5/-	10/-	16/-	21/-	30/-
Carriers	—	1/6	2/6	3/-	3/6

Colmore Row, Birmingham.

Lancaster's New Hand Camera "STOPIT"



385, Weight, 14oz., Very Compact, Featherweight, **10/6**

Excellent Lens, Iris Shutter, Metal Slide, **10/6**

Extra Metal Slides, **2/6**

386

Ditto, ditto, with Rackwork Adjustment for Focussing, Double Finder, Celluloid Focussing Screen, &c., **15/-**

387

Set of 3 Featherweight Metal Double Slides, in Leather Case, with Shoulder Straps to fit above Cameras, **9/6**

385

Lancaster's Hand Camera, "**STOPIT**" has been introduced to supply a Reliable Camera to thousands of Amateurs who cannot give a fancy price for a Hand Camera. Messrs. J. L. & S., now offer a complete outfit for **10/6**

The Camera is well made, with Finder, Achromatic Meniscus Lens of fine definition, New Iris Shutter and Featherweight Metal Slide, carrying two ¼-plates or films.



387

Lancaster's Omnigraph

(PATENT)

EVERYBODY'S HAND CAMERA. WEIGHT, 1½lbs. SIMPLE. COMPACT. PORTABLE.



No. 388

THE OMNIGRAPH is an excellent Hand Camera, with Meniscus Achromatic Lens and See-Saw Shutter. The Plates are carried in Metal Slides or in Carriers in a Changing Box, and are supplied in either form at the same prices.

388 M.S. Omnigraph with 3 Lancaster's Patent Metal Slides, carrying 6½-plates or films £1 1 0

Omnigraph, ditto ditto, with 3 Metal Slides, carrying six ½-plates or films .. £2 2 0

SUPERIOR OMNIGRAPH, covered in best Leather, all parts hidden, made to represent travelling case. Complete with Finder, best Achromatic Meniscus Lens, See-Saw Shutter, and Iris Diaphragms.



Superior Omnigraph, 4½×3¼ £1 11 6

Superior Omnigraph, 5×4, £2 2 0

Superior Omnigraph, 6½×4¾ £3 3 0

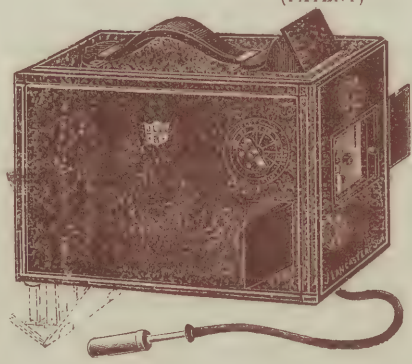
Extra Changing Boxes, with Metal Carriers for Six Plates—

½ .. 7/6
5×4 .. 10/6
6½×4¾ .. 15/-

LANCASTER'S

"Perfect Omnigraph"

(PATENT)



No. 389

PERFECT OMNIGRAPH

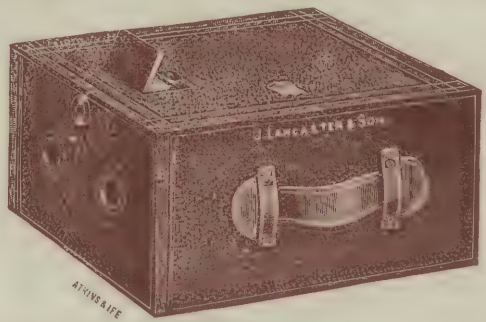
covered in best Leather, Instantaneous Lens, with Iris Diaphragm and See-Saw Shutter, Double Finder, Rack Adjustment, Divided Scale, etc., etc., with three Patent Metal Slides, carrying six Plates or Films.

¼-plate, £2 2 0
½-plate, £4 4 0

Extra Metal Slides,
carrying 2 plates,
¼-plate, 2/6 ea.; ½-plate, 4/6 ea.

Above are also supplied fitted with Changing Box, carrying 6 Plates in 3 Metal Double Carriers, at same price.

LANCASTER'S "STEREO OMNIGRAPH" is an excellent Hand Camera for Stereoscopic Work. It has Changing Box and Metal Carriers carrying Six Plates, and is made in three qualities.



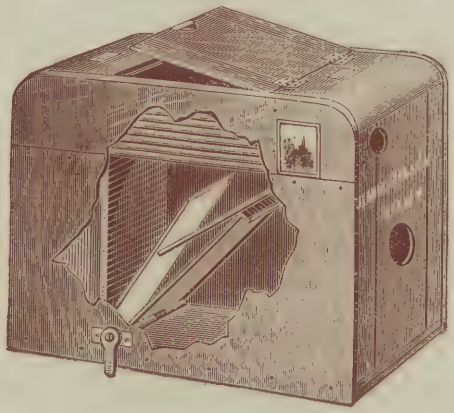
Cloth-covered Stereo Omnigraph ..	£2 2 0
Superior Covered Leather Omnigraph ..	3 3 0
Perfect Omnigraph ..	4 4 0

LANCASTER'S PERFECT

HAND, MAGAZINE or DETECTIVE CAMERA

(THE "ROVER" PATENT)

No. 386



No. 386

PRICES, Complete.

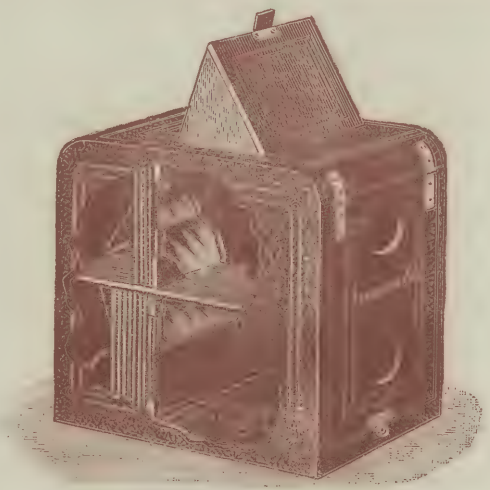
No. 1	No. 2	No. 3	No. 4
$3\frac{1}{4} \times 3\frac{1}{4}$	$4\frac{1}{4} \times 3\frac{1}{4}$	5×4	$6\frac{1}{2} \times 4\frac{3}{4}$
£2 12 6	3 3 0	4 4 0	5 5 0

THE "ROVER" is one of the most perfect Cameras ever put on the market. It consists of practically three chambers :— **A**, a space on top, holding twelve Plates or Films in our new patent Sheaths or Carriers ; **B**, the Camera proper ; and **C**, a space at back to hold twelve Plates after exposure. Each chamber is light-proof. *The method of Exposure is as follows :—*

Press Lever at bottom of Camera slightly forward—this allows one plate to fall ; then move Lever backward, and plate falls into position. The plate—after exposure—goes into back chamber, a venetian shutter being opened and closed.

The Lens is a specially made one, *very rapid*, with See-Saw Shutter, Patent Adjustable Diaphragms. The whole is enclosed in a best Leather Case, of most convenient and handy size. Only one Plate is in the Camera at time of exposure, all others are in light-proof Chambers. The Camera is exceedingly simple in use.

LANCASTER'S LATEST "Hand Camera"



THE "ZOEGRAPH" PATENT.

THIS is a new Hand Camera, carrying twelve Plates or Films in special Metal Carriers, which are carried in the lower half of Camera, and after exposure, by a simple movement of Venetian Shutter, are carried into upper half. **The Lens** is a very rapid one of latest construction, with best Shutter, etc. The Finder is full size of Plate, and has a Cover which only allows a small aperture for viewing image through, thus giving a bright, full-sized image of object the moment of exposure.

"Zoegraph," complete, ½-plate	**£3**	**3 0**
" " ½ "	**5**	**5 0**

POCKET "ZOEGRAPH."

Pocket Zoegraph, carrying twelve Films, 2½in. × 1⅝in., made to carry in the pocket. A complete instrument, with special Lens and Ever-set Shutter and Daylight Finder.

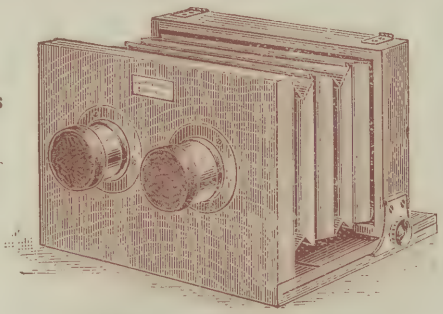
To carry twelve Films, 2½in. × 1⅝in. ..	**£1**	**1 0**
" " " 3¼in. × 2½in. ..	**1**	**11 6**

RAPID FILMS, 2½in. × 1⅝in., **6**d. per doz.; 3¼in. × 2½in., **10**d. per doz.

Colmore Row, Birmingham.

Stereoscopic Camera

BEST LENSES
RAPID
OR SLOW AT
WILL.

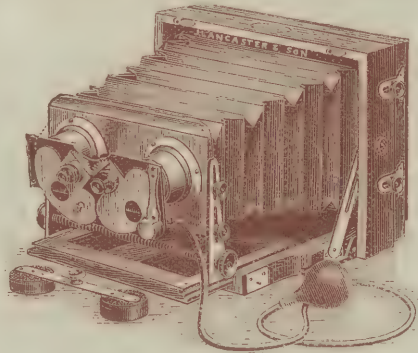


CAMERAS.
BEST MAKE,
PORTABLE.

STEREO MERVEILLEUX.

419 The Stereo Merveilleux consists of a well-made Mahogany Camera, with one Double Slide; Pair of good Lenses; and Camera Stand .. **£2 2 0**

RAPID
LENSES.



SHUTTER
AND CAPS.

STEREO INSTANTOGRAPH.

421 The Stereo Instantograph; Instantograph Shutter; Best Lenses and Stand; for $6\frac{3}{4} \times 3\frac{1}{4}$ plates **£4 4 0**

422 The Stereo Instantograph, with an arrangement for taking plates $7\frac{1}{4} \times 4\frac{1}{2}$, and smaller plates, and extra bellows for Stereo work. A splendid Camera for general work **5 5 0**

Rectigraph Lenses fitted to 421 and 422 .. **£2 2 0** extra.

Double Dry Slides. 419 and 420, **10/6**; 421, **12/6**; 422, **15/-** each.

Colmore Row, Birmingham.

· · · Lenses · · ·

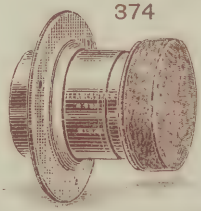
MESSRS. LANCASTER & SON again have pleasure in recording the fact that during the last eleven years they have sold over **230,000** of their Lenses, and have received most flattering testimonials.

Messrs. Lancaster & Son warn customers before purchasing to see that every Lens is stamped with their Trade Mark or has their name engraved upon it in full.

They do not send a Lens out unless it passes the most stringent testing. These remarks apply to all Lenses of their manufacture.



374



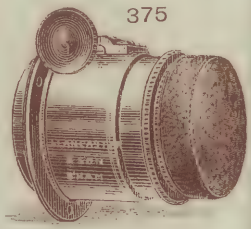
Landscape Lenses, mounted in Brass, with Sliding Tubes.

The Lenses are of the Meniscus form, giving perfect definition from centre to margin.

Size—	¼	½	1/1	10×8	12×10	15×12
Focus	5½	9	12	16	20	24-ins.
Price	**5/-**	**10/-**	**15/-**	**20/-**	**25/-**	**30/-**

· ◆ ·

375



Superior Lenses, in Rackwork Mounts. Same Focus as No. 374

¼	½	1/1	10×8	12×10	15×12
7/6	**15/-**	**22/6**	**30/-**	**37/6**	**45/-**



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Narrow Angle Lens (PATENT)

This is an excellent Lens for Narrow Angle work, giving superb definition.

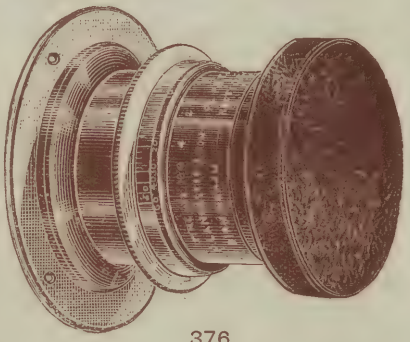
Size—	¼	½	1/1	10×8	12×10
Focus	8	12	18	22	26-in.
Price	**12/6**	**21/-**	**30/-**	**42/-**	**50/-**

376 N.A.

LANCASTER'S NEW LENSES

The Rectigraph Series

THESE are a series of Lenses of the highest quality. With them can be obtained beautifully modelled portraits, excellent groups and landscapes, and for Architectural work they cannot be excelled. The Lenses, being both perfectly symmetrical, will work full aperture for portraits and groups, and when stopped down a little will produce landscape and architectural photos that it would be impossible to surpass.



376

SILVER RING RAPID RECTIGRAPH,

WITH

Patent Adjustable Diaphragms.

	$\frac{1}{4}$	$\frac{1}{2}$	1	10×8	12×10	15×12
Diam. of Lens	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{5}{8}$
Focus	$5\frac{1}{2}$	$8\frac{1}{2}$	$11\frac{1}{2}$	14	18	24-in.
PRICE	**40/-**	**60/-**	**80/-**	**100/-**	**120/-**	**140/-**

Leather Cases, lined silk, to carry Rectigraph.

2/6 3/- 3/6 4/- 4/6 5/-



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376 A.L.

IN MOROCCO CASES.

Mounted in Aluminium.

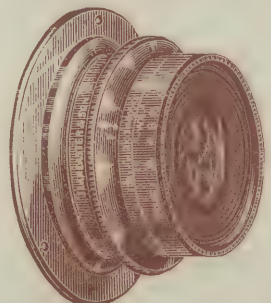
Finest Quality.

50/- 70/- 92/- 115/- 140/- 165/-

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Lancaster's Rectigraph Lenses.

376 W. A.



RECTIGRAPH.

THESE Lenses are symmetrical and when used either together as a Wide Angle Combination or singly as a Narrow Angle Lens the definition is perfect. The foci of Combination and Back Lens are both given below.

Mounted in Best Metal with Silver Ring.

	¼	½	1/1	10×8	12×10	15×12	22×18
Focus of Wide Angle Rectigraph..	3¼	5	6½	8	10	13	17-in.
Focus of Back Lens ..	7	10½	14	18	22	27	35-in.
Price	**30/-**	**42/-**	**50/-**	**63/-**	**70/-**	**80/-**	**120/-**
Mounted in Aluminium.. ..	**36/-**	**50/-**	**60/-**	**75/-**	**85/-**	—	—

The graduations on Scale are for the Combination and when using Back Lenses they must be doubled.

COMBINATION . . RECTIGRAPH.

(Patent)

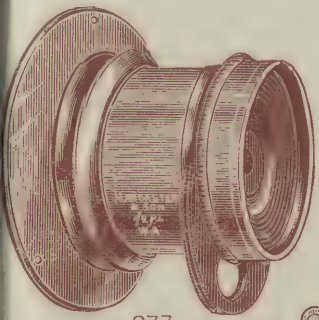


THESE Lenses are of the highest quality; great care being taken in their construction. The Combination Rectigraph can be used as a Wide, Ordinary, and Narrow Angle Lens. The different foci being given below.

Combination Rectigraph Lens.

	¼	½	1/1	10×8	12×10	15×12
Focus of Combination ..	3¼	4¾	6½	8	9	10-in.
Focus of Front Lens.. ..	5	8	10	12	14	16-in.
Focus of Back Lens.. ..	9	12	18	20	24	30-in.
Price	**30/-**	**42/-**	**50/-**	**70/-**	**90/-**	**110/-**
Mounted in Aluminium ..	36/-	50/-	60/-	80/-	105/-	—

The Scale has three sets of Graduations:—
First for Combination; Second for Front Lens only; Third for Back Lens only.



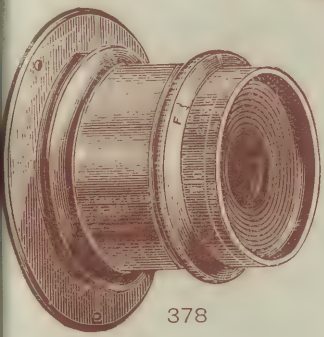
377

Wide Angle Lenses.

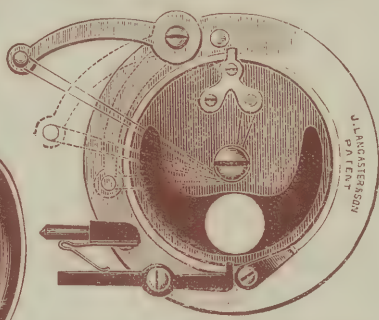
No. 377

THESE Lenses are very useful in confined situations and for copying full size in an ordinary Camera. The focus of each is given below.

Size	¼	½	1/1	10×8	12×10
Focus	4	6½	8½	10	12in.
PRICE ..	**10/6**	**15/-**	**21/-**	**25/-**	**30/-**



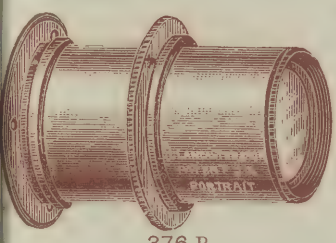
378



Lancaster's Patent Instantograph Lenses (No. 378) for Groups, Portraits, Landscapes or Architectural Work, with Patent Shutter, and Patent Adjustable Diaphragm

Size	¼	½	1/1	10×8	12×10	15×12
Focus	5½	8½	11	14	17	21in.
PRICE	**21/-**	**30/-**	**42/-**	**52/6**	**63/-**	**84/-**

Rapid, Portable, Excellent Definition.



376 P

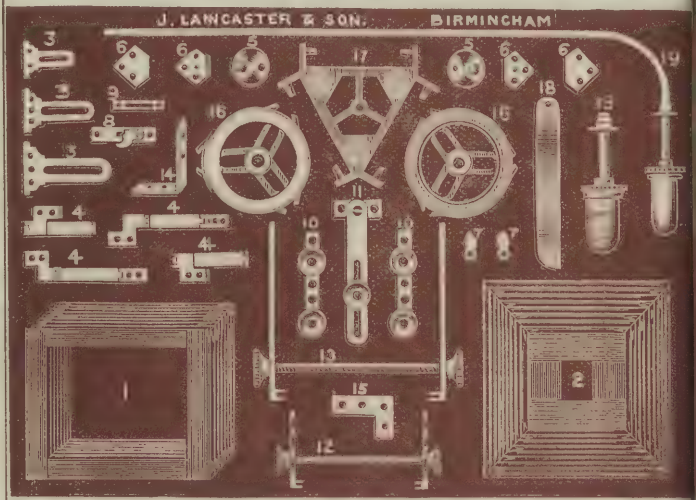
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Portrait Lens.

No. 376P, with Patent Diaphragms.

¼, 21/- ½, 42/- 1/1, 43/-

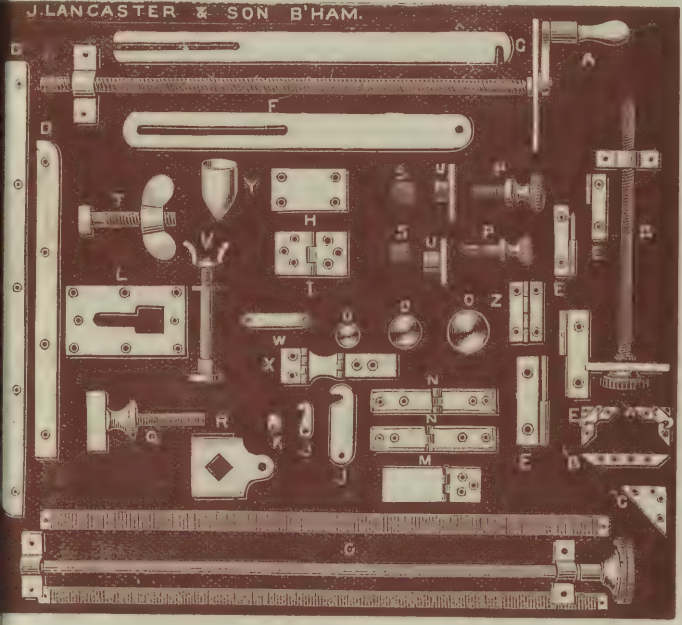
SUNDRIES.



		¼	⅕	1/1	10×8	12×10	15×12
1	Cloth Bellows, ordiinary length	1/6	3/-	4/6	6/-	9/-	12/-
	" " " square	2/-	3 9	5/6	7/6	10/-	13/-
	" " " Kinnear	2/6	5/-	7/6	10/-	15/-	18/6
2	Leather Bellows " oblong	2/6	4/6	6/6	8/6	12/6	15/-
	" " " square	3/-	6/-	8/6	10/6	15/-	20/-
	" " " Kinnear	4/-	8/-	12/6	15/-	21/-	30/-
3	Swing-back Plates each	-/2	-/2	-/3	-/3	-/4	-/4
4	Patent Focussing Hinges set of 4	1/-	1/-	1/-	1/-	1/-	1/-
5	Circular Catches for Reversing Backs .. pair	-/6	-/6	-/6	—	—	—
6	Circular Catch Angle Plates "	-/2	-/2	-/2			
7	Focussing Screen, Bent Catches each	-/2	-/2	-/2	-/2	-/2	-/2
8	Cheese Cutters "	-/6	-/6	-/6	-/6	-/6	-/6
9	Slotted Plates for ditto "	-/1	-/1	-/1	-/1	-/1	-/1
10	Plates and Screws for Sides of Camera Fronts "	-/9	1/-	1/3	1/6	1/9	2/-
11	Side Stays and Fittings for "Instantograph" "	1/3	1/6	2/-	2/6	3/-	3/6
12	"Merveilleux" Front Stages "	1/6	2/-	2/6	3/-	3/6	4/-
13	"Instantograph" ditto "	2/6	3/-	4/-	4/6	5/-	5/6
14	Brass Corners "	-/2	-/2	-/3	-/3	-/4	-/4
15	Brass Plates for Sliides "	-/2	-/2	-/3	-/3	-/4	-/4
16	Brass Circular Tops for Stands "	1/6	2/-	2/6	3/-	3/6	4/-
17	Triangle ditto "	2/6	3/-	4/-	5/-	6/-	7/-
18	Springs for Printing Frames .. per pair	-/3	-/4	-/6	-/8	-/10	1/-
19	Patent Pumps for Shutters	1/6	1/6	1/6	1/6	2/-	2/-

Colmore Row, Birmingham.

SUNDRIES *Continued.*



			¼	½	1/1	10×8	12×10	15×12
A	Strong Screw for Cameras	each	2/6	4/-	6/6	8/6	10/6	12/6
B	Lighter " "	"	2/-	3/6	5/6	7/6	8/6	10/6
C	Racks and Pinion	"	3 -	5/-	7/6	10/6	12/6	15/-
D	Brass Strips for Camera Backs..	per pair	-/6	-/9	1/-	1/3	1/6	2/-
E	Pull-off Hinges	"	-/2	-/2	-/3	-/3	-/3	-/3
F	Side Stays with Screws	each	1/3	1/6	2/-	2/6	3/-	3/6
G	" for Instantograph ..	"	1/-	1/6	2/-	2/6	3/-	3/6
H	Plates for Stands	"	-/1	-/1	-/2	-/2	-/2	-/2
I	Hinges for Tail Boards ..	per pair	-/2	-/3	-/4	-/4	-/6	-/6
J	Hooks for Slides	"	-/1	-/1	-/1	-/1	-/1	-/1
J	" Stands	"	-/2	-/2	-/3	-/3	-/4	-/4

Colmore Row, Birmingham.

SUNDRIES *Continued.*

			½	⅛	1/1	10×8	12×10	15×12
K	Turn Buttons for Slides	per pair	-/1	-/1	-/1	-/1	-/1	-/1
L	Plates for Bottom of Cameras ..	"	-/6	-/9	1/-	1/-	1/6	1/6
M	Clip Hinges for Dark Slides ..	"	-/2	-/2	-/3	-/3	-/4	-/4
N	Hinges for Focussing Glass ..	"	-/2	-/2	-/3	-/3	-/4	-/4
O	Rising Front Screws	each	-/4	-/5	-/6	-/8	-/8	-/8
P	Screws for Bottom of Camera	"	-/4	-/6	-/6	-/6	-/9	-/9
Q	T Screws for Stands	"	-/6	-/8	-/8	1/-	1/-	1/-
R	Ears for Stands	per set of Six	-/4½	-/6	-/9	1/-	1/-	1/4
S	Bushes for Screws	per pair	-/1	-/1	-/1	-/2	-/2	-/2
T	Screw and Butterfly for Stands ..		-/6	-/9	1/-	1/3	1/6	1/6
U	T Bushes for Cameras	each	-/1	-/2	-/2	-/3	-/3	-/3
V	Screws for Stands	per set of Three	1/-	1/3	1/6	1/6	1/9	2/-
W	Straps for Focussing Frame " "	Four	-/2	-/3	-/4	-/4	-/4	-/4
X	Double Hinges for Focussing Frame		-/3	-/3	-/4	-/4	-/6	-/6
Y	Toe Caps, all in one piece (3)		-/3	-/4	-/4	-/6	-/6	-/9
Z	Hinges for Dark Slides, &c. ..	per pair	-/2	-/3	-/4	-/4	-/6	-/6
A′	Corner Plates for Reversing Back, &c.	"	-/3	-/4	-/4	-/6	-/6	-/6
B′	Corner Plates for Slides, &c. ..	"	-/2	-/2	-/3	-/3	-/4	-/4
C′	Angle Plates for Reversing Back, &c.	"	-/2	-/2	-/3	-/3	-/4	-/4
Complete Set of Brass Work for 'Le Merveilleux' ..			5/6	7/6	10/6	12/6	15/-	
Ditto for 'Meritoire'			7/6	10/6	12/6	15/-	18/-	
Ditto for 'Instantograph'			10/6	15/-	21/-	25/-	30/-	
Fine Ground Focussing Glass			-/6	1/-	1/6	2/-	2/6	3/-
'Merveilleux' Lens, unmounted			3/-	6/-	10/-	15/-	20/-	30/-
'Instantograph' " "			12/6	21/-	30/-	40/-	50/-	60/-
Leather Caps for Lenses			-/6	-/6	-/8	-/8	1/-	1/-
Black Cardboard for Slides	per doz.		-/6	-/9	1/-	1/6	2/-	2/6
Flanges to Lenses	"		1/-	1/6	2/-	2/6	3/-	3/6
Extra Fronts	"		1/-	2/-	2/6	3/-	3/6	4/-

BELLOWS OF ANY SIZE MADE TO ORDER.

DARK SLIDES MADE TO ORDER.

Instantaneous Shutters.



Lancaster's New Shutter,

The See-Saw Patent.

THIS Shutter consists of two plates moving across each other perfectly smooth and without any vibration. They are moved by means of a cylinder and piston connected with a beam or see-saw arrangement, which moves both together.

PRICES, complete.

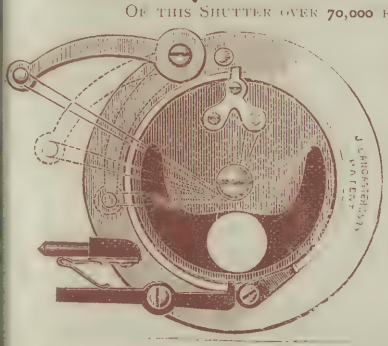
	No. 1	2	3
Diam. of Aperture ..	½-in.	¾-in.	1-in.
Price	6/6	8/6	10/6
	No. 4	5	6
Diam. of Aperture ..	1⅛-in.	1⅜-in.	2¼-in.
Price	12/6	15/-	21/-

Aluminium See-Saw Shutters.

¼	½	1	10×8	12×10
10/-	12/6	15/-	17/6	21/-

Lancaster's Patent Instantograph Shutter.

Of this Shutter over 70,000 have been Sold.



WITH this shutter almost any exposure may be given, as bands of all strengths may be used, and two or three may be used at the same time; an exposure of 100th of a second can be used with it down to almost anything.

¼, 5/- ½, 7/6 1, 10/-
10×8, 12/6 12×10, 15/-

Colmore Row, Birmingham.

Lancaster's . . New 'Rubralux' Lamp.



LANCASTER'S NEW

DARK ROOM LAMP.

The 'Rubralux' Patent.

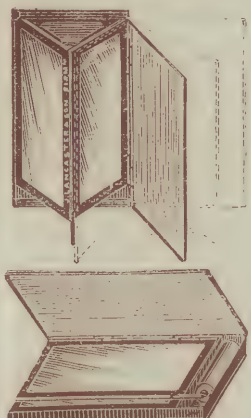
THIS Lamp is said to be the best ever invented for the Dark Room.

There are two folding glazed doors—one Ruby and the other Canary Yellow—each can be used separately or both together. The front is hinged and lined with silvered reflector, which floods the plate with ruby light and prevents any light reaching the eye of operator excepting that reflected from plate.

Price, 7/6 Larger Lamp, **10/6** Ditto for Gas, **12/6**

LANCASTER'S

PATENT FOLDING LAMP.



THIS Lamp folds into 3-in. It has a self-feeding Candle Chamber, and when opened as in wood-cut may have the door closed on one-half giving only darkest ruby light, and may—as developing proceeds—be gradually opened, thus regulating amount of light to the greatest possible nicety **Price 5/-**

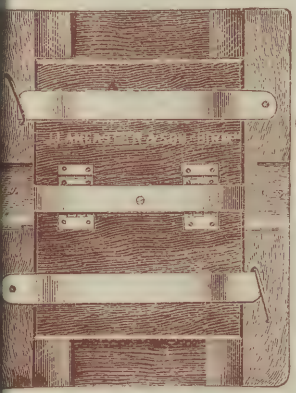


LARGE PARABOLOID LAMP.

THIS is an excellent Lamp, h sliding frames containing c oured screens. It is made with O Burner and also with Gas Burn Oil Paraboloid Lamp complete 1 Gas " " " 17

Printing Frames

	¼	½	1/1	10×8	12×10	15×12
Printing Frames ...	6d.	1/-	1/6	2/-	3/-	4/-
Best Quality ...	9d.	1/6	2/3	3/-	4/3	5/3



LANCASTER'S NEW MAHOGANY

TRIPLE PRESSURE PRINTING FRAME

Enabling both ends of Print to be examined at same time without the least fear of moving Print.

¼	½	Stereo	1/1	10×8	12×10	15×12
2/6	2/3	2/3	3/6	4/9	6/-	7/6 ea.

This is a perfect Printing Frame, no unequal pressure, and no breaking of Negatives.

THE FRAMES ARE WELL-MADE AND VERY DURABLE.

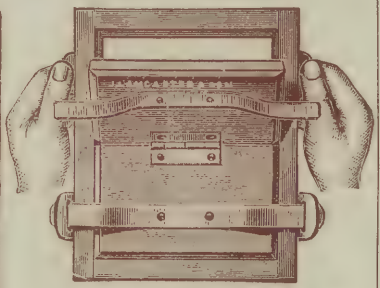
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LANCASTER'S NEW

LANTERN SLIDE PRINTING FRAME.

This Printing Frame is so made that any part of Plate can be copied.

Price 9d. and 1/- each.



NEW PRINTING FRAME

with Slide Clip Arrangement.

¼-plate, 9d. ½-plate, 1/6

1/1 " 2/3 10×8 " 3/-



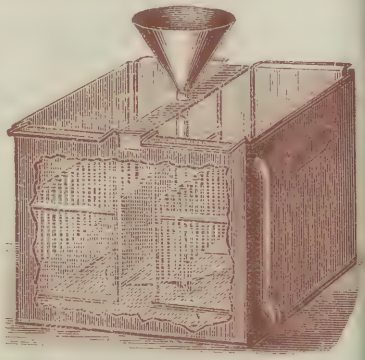
Colmore Row, Birmingham.

LANCASTER'S

'HIERO' WASHER,

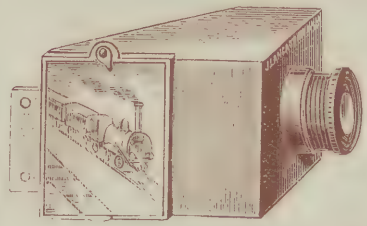
FOR

NEGATIVES OR PRINTS.



For 26 ¼-plates .. **5/-**
½ " ... **7/6**
1 " ... **10/6**

Each holds 26 Plates.



LANCASTER'S

NEW FINDER.

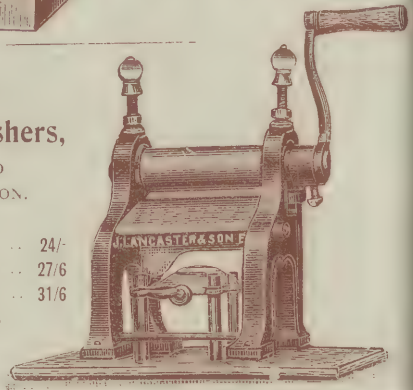
Price, **5/-**

Beautifully finished, with two Brackets, one to screw on to side, and the other on top of Camera.

LANCASTER'S

Amateurs' Burnishers,

WELL MADE AND
EXCELLENT IN ACTION.



Carte ..	10/6	10×8 ..	24/-
Cabinet .	15/-	12×10 ..	27/6
½ .	21/-	15×12 ..	31/6

Superior Quality.

¼. 15 · ½. 21 · ¼. 30 ·
10 · 8, 35/- 12 · 10, 40/-

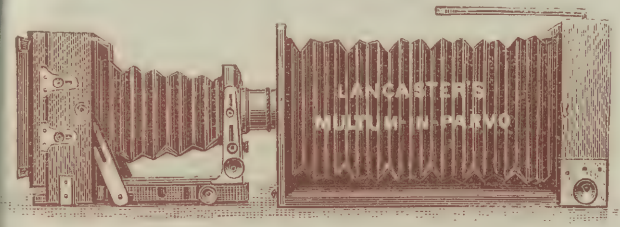
Colmore Row, Birmingham.

LANCASTER'S

"Multum-in-Parvo" Camera

FOR ENLARGING AND REDUCING.

THE "Multum-in-Parvo" Camera can be used with any ordinary Camera, and may be used for Enlarging, Copying same size, or Reducing. Also for Lantern Transparencies.



A CAPITAL DAYLIGHT ENLARGING APPARATUS.

For ENLARGING.—The Negative must be placed in a Dark Slide of ordinary Camera, and the enlargement taken in Multum-in-Parvo, the plate going into the end of Camera.

For COPYING SAME SIZE.—The two Cameras must be opened out equally to about twice the length of focus of lens used.

For REDUCING.—The Negative must be placed in Multum-in-Parvo Camera, and Plate put into Dark Slide of ordinary Camera.

PRICES.

To enlarge up to			To enlarge up to		
¼-plate,		0 10 6	15 × 12-pl.		2 0 0
½	"	0 15 0	20 × 16	"	3 15 0
1	"	1 1 0	24 × 20	"	4 4 0
10 × 8	"	1 5 0	30 × 24	"	5 5 0
12 × 10	"	1 10 0	36 × 30	"	8 8 0

EXTRA SLIDES—

¼, 5/- ; ½, 7/6 ; 1, 10/- ; 10 × 8, 13/6 ; 12 × 10, 16/- ; 15 × 12, 20/-

The amount of Enlargement or Reduction can be varied as required.

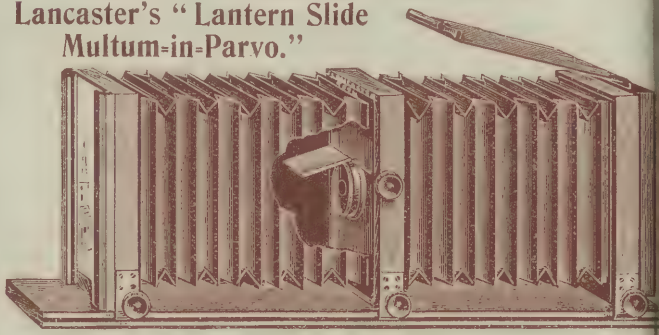
Requisites for Lantern Slides.

PAPER MASKS, 3¼in. square, in Oblong Cushion, Circle, Cushion, Oval, and Dome Shapes—3d. per doz. ; 3/- per Gross.

BEST POLISHED CROWN COVER GLASSES, 3¼in. square, for mounting Transparencies—6d. per doz. ; 5/- per gross.

ADHESIVE BINDING STRIPS—1d. per doz. ; 1/- per Gross.

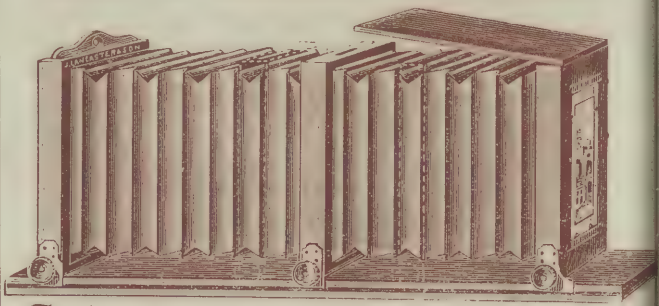
Lancaster's "Lantern Slide Multum-in-Parvo."



THIS is a well-made Camera, with Double Bellows, Mahogany Slide, and Focussing Slide; excellent Lens with Shutter. The Camera can be used for copying prints, photographs, &c., exactly as an ordinary Camera, and for making Lantern Slides it is used as represented in woodcut.

CAMERA, LENS, FLAP SHUTTER, &c., 4-PLATE .. 21/-

Lancaster's "Combination Multum-in-Parvo."

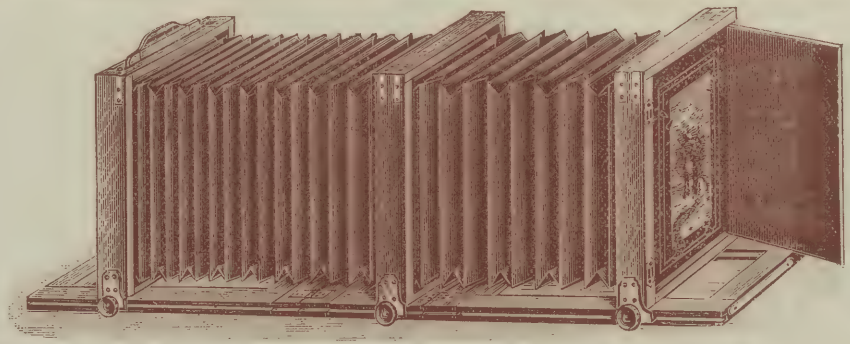


THIS is a well-made Camera with Double Bellows. The Camera and and Lens may be used for ordinary work. The Lens is an Achromatic one, specially constructed for enlarging and reducing. Each Set consists of Camera, Dark Slide, and Achromatic Lens.

½ COMBINATION MULTUM-IN-PARVO .. 35/-

10×8, 42/-; 12×10, 50/-; 15×12, 63/-; 18×16, 105/-; 24×20, 126/-

LANCASTER'S FIRST QUALITY COMBINATION "Multum-in-Parvo"



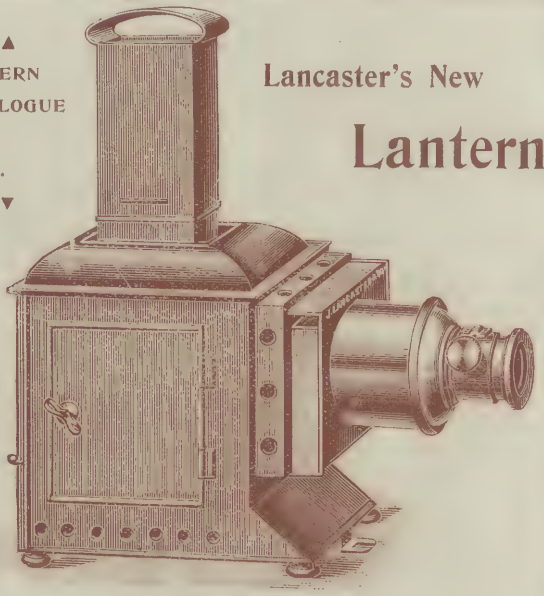
BRASS-BOUND Mahogany Camera with Double Bellows, Folding Tail Board, superior Achromatic Enlarging Lens, and Carriers down to ¼-plate, making a complete Daylight Enlarging Apparatus.

¼-plate	Brass-Bound Mahogany "Multum-in-Parvo," with ½ and ¼ Carriers, Achromatic Lens, and Dark Slide			£3 10 0
10 × 8	ditto	ditto	ditto	4 4 0
12 × 10	ditto	ditto	ditto	5 5 0
15 × 12	ditto	ditto	ditto	6 6 0
20 × 16	ditto	ditto	ditto	10 10 0

▲
LANTERN
CATALOGUE
POST
FREE.
▼

Lancaster's New

Lanterns



438 R

438	This LANTERN contains 4-in. Condensers mounted in Brass Cell, Achromatic Front Lenses in Sliding Brass Mount, Three-wick Lamp of Good Quality, and is in every way an excellent Lantern, giving a 10-ft. disc	£1 1
438R	Superior ditto, with Rack Adjustment	£1 5
	Metal Cases to carry Lantern, complete, 2/6 and 3/6 Russian Iron, with lock and key, 4/6	
438B.R.	LANTERN, with 4-in. Condensers, best Achromatic Front, and Three-wick Lamp	£1 10
453	Ditto, with Brass Fronts, Rackwork Adjustment, 4-in. Condensers, and best Front Lenses	£2 2
469	Improved Excelsior LANTERN, made of Mahogany, with 4-in. Condensers, special Achromatic Front, Four-wick Lamp and Case	£3 3
471	Biunial LANTERN, built in Mahogany, 4-in. Condensers, Achromatic Front	£6 6



LANCASTER'S
IMPROVED MODEL
"Excelsior"

469 B

THE NEW MODEL "EXCELSIOR" is made of Mahogany, Brass Bound, and has 4-in. Best Condensers, mounted in Brass, with Ventilation Apertures to prevent Condensing Lens steaming during exhibition. Special Achromatic Front, with large Back Combination, giving brilliant definition and covering well a twelve-feet disc, with crispness from centre to margin.

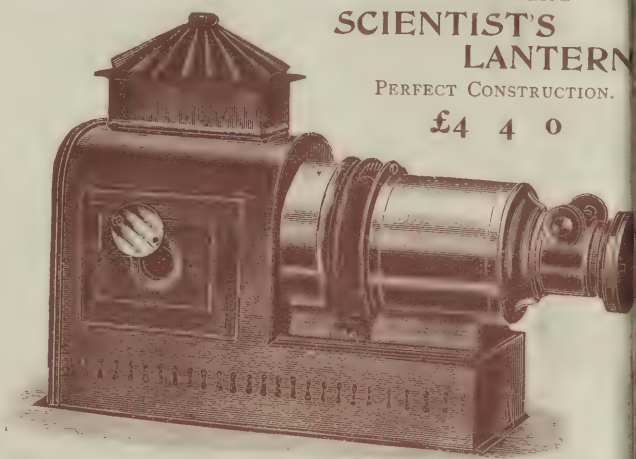
Our New Four-wick Lamp, with the light concentrated into the smallest possible space, giving brilliant illumination ; new system of ventilation, in which air currents enter between the wicks—producing maximum light from Hydro-carbons burnt. The whole packed in Polished Wood Case, with Handle, Lock and Key .. **£3 3 0**

469 B

IMPROVED "EXCELSIOR." This is a new Lantern on the model of "Excelsior," but with considerable improvements. The whole of the front stages are of strong, well-finished brass. The Lamp is one of our latest productions, and the Front Combination is our new Objective, giving different sized pictures at one distance with perfect definition. **Price** complete, in Polished Box, with Lock and Key, **84/-**

This Lantern is the most compact and perfect ever introduced.

Colmore Row, Birmingham.



FITTED with best Condensers and finest quality achromatic objective new pattern Four-wick Lamp, with every recent improvement, solid Brass Front in sections, so that the centre part can be removed for physical experiments. The body of Lantern is made of best quality Russian iron. Lantern, with best 4-wick Lamp, 84/-

LANCASTER'S BIUNIAL LANTERNS.

471

WELL-MADE and strongly built Biunial in Mahogany, well lined with Metal Casing and ventilated. Best 4-in Double Combination Condensers, Achromatic Compound Object Lenses, in Rack Mounts. All Brass Stages, with sliding adjustment, new adjusting and changing centring arrangement, so that a perfect coincidence of discs is quickly obtained £6 6 0

Pair Blow-through Jets, Cog-wheel Lime Adjustment, Gas Bag, Board, Retort, Purifier, Dissolver, &c. £4 4 0

Ditto Oxy-Hydrogen Jets, Platinum Points, pair of Bags, Boards, &c., complete £6 6 0

Strong Polished Cabinet, with drawer, &c., to carry Biunial, &c. £1 1 0

472

FIRST Quality Mahogany Biunial, with best 4-in. Condensers, Triple Achromatic Objectives mounted in best Brass Fronts, Cones and Sliding Tubes, giving a 20-ft. disc at any distance from screen. In Cabinet, with drawers and space for all extras £12 12 0

Pair Blow-through Jets, Cog-wheel Lime Adjustment, Gas Bag, Board, Retort, Purifier, Dissolver, &c. £4 4 0

Ditto Oxy-Hydrogen Jets, Platinum Points, pair Bags Boards, &c., complete £6 6 0

Special 91-B
35843

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